INDIANA'S TOP 25 TECH CAREERS AND THE SKILLS AND COMPETENCIES NEEDED TO SUCCEED IN THEM

TECHPOINT

TABLE OF CONTENTS

Report Overview	3
Purpose	3
Development Process	4
Partners	4
Industry-Wide Foundational Competencies	5
Information Technology Pathways	6
IT Support Technician	6
Associate/Junior Developer	9
Software Developer	12
Business/Data Analyst	16
Project Manager	19
Product Owner	22
Cybersecurity Specialist	25
Business Development Representative	27
Salesforce Administrator	30
Cloud Administrator	33
Cloud Engineer	36
Data Scientist	40
AT/Machine Learning Engineer	43
DevOps Engineer	47
Full Stack Developer	50
IoT Developer	53
Manufacturing and Robotics Technician	56
Database Administrator	59
UI/UX Designer	62
Bioinformatics Scientist	65
System Architect	68
Network Engineer	72
Digital Marketing Specialist	75
eCommerce Specialist	78
Health IT Specialist	81
About	85
Thanks	86

REPORT OVERVIEW

Indiana's economic productivity and innovation ecosystem increasingly hinge on technology, underscoring the need for high-skilled tech talent across all industries to spur this innovation and growth. Recognizing this, a cross-section of leaders from Indiana businesses of all sizes worked with TechPoint on this report to pinpoint and define the 25 most in-demand tech roles within the state. The report builds on the top 10 roles identified by industry leaders in 2022. The study reaffirms the importance of these roles and adds to them, representing the 25 most in-demand, high-need technology-related occupations. These roles, along with the high-skilled workers poised to fill them, are the catalysts for Indiana's future growth. They also represent the most significant avenues for opportunity for Indiana's workforce.

The business leaders from over 50 cross-sector organizations involved in crafting this report have meticulously identified the essential skills and competencies required for candidates to excel from day one in these roles. Each identified position serves as a guide for universities and talent developers, offering a clear path for individuals aiming for a career in tech, and providing a blueprint for employers to synchronize their needs with the capabilities of talent developers and the available workforce. The cornerstone of Indiana's future economic prosperity and the well-being of Hoosiers lie in an innovation-driven approach, powered by the contributions of high-skilled tech professionals.

In addition to industry leaders direct expertise, this report relied on Lightcast, the Bureau of Labor Statistics, and O*Net data.

PURPOSE

As automation and changing economic factors continue to impact American workers in traditionally stable industries, it is critical that employers better understand and plan for these changes. Declining and emerging industries and occupations significantly impact workers and employers. The best plan to counteract any negative economic impact resulting from industry and occupation volatility and prepare for jobs that do not exist today is to create roadmaps for how individuals transfer competencies and knowledge to high-growth industries. TechPoint recognized the value of plotting a roadmap and contracted The Council for Adult and Experiential Learning (CAEL) to develop an actionable resource to inform how to design and implement processes to identify the best job opportunities in Information Technology (IT).

By outlining in-demand and growth-oriented IT occupations in the Indianapolis MSA and mapping how competencies gained transfer to entry-level and high-growth opportunities, our community can create awareness among job-seekers and businesses and provide more lines of sight on how specific competencies support the fulfillment of critical jobs in the community. Additionally, this report guides TechPoint on crucial decisions regarding the allocation of resources and the prioritization of its next steps.

DEVELOPMENT PROCESS

Data gathering for this project commenced in the fall of 2021 when CAEL provided data analytics insights into the IT landscape across Indiana. In collaboration with TechPoint and EmployIndy, CAEL utilized various data sets to identify target occupations for the project, focusing on those with projected employment growth in the Indianapolis MSA.

In early January 2022, TechPoint achieved consensus from the Advisory Committee on the top six occupations, split evenly between tech- and business-skilled roles, to develop career competencies and pathways. Following this, focus groups brought forth essential suggestions and questions regarding competencies and credentials for further discussion and alignment. This effort continued through February, leading to the refinement of the pathways.

In June 2022, TechPoint advanced the industry engagement process, focusing on building career competencies and pathway development for four additional in-demand tech occupations. In October 2023, TechPoint once again extended this process, aiming to finalize the remaining fifteen occupations which was completed in December 2023.

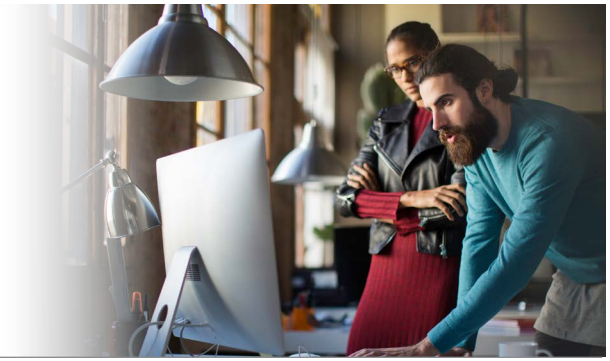
PARTNERS

TechPoint would like to thank the following employers who answered the call to help provide content and context to the final maps and pathways, participated in the feedback process and provided leadership on the advisory the committee and focus groups.

- Accenture
- Aunalytics
- Belden Inc.
- Blue Polaris LLC
- Boyce Forms-Systems
- Community Health Network
- Conexus
- Crosslake Technologies
- Cummins
- CVS Health
- Data 317
- DMI
- Eli Lilly and Company
- Ellipsis Education
- Eleven Fifty Academy
- FGX International
- Gaylor Electric
- Genesys
- hc1
- High Alpha
- Hirons
- Holy Cross College
- Indiana Department of Homeland Security
- Indiana Management Performance Hub
- Indiana Office of Technology
- Infosys
- Ironworkz
- Ivy Tech Community College
- JobWorks Inc.
- Kinney Group
- LHP Engineering Solutions
- Litera
- Matrix Integration
- Mosaic Data Scientists
- Moser Consulting
- Naval Surface Warfare Center, Crane Division
- Oracle Corporation
- Parkview Health
- Personify
- Purdue College of Pharmacy
- Resultant
- Salesforce
- Sandler DTB
- Sela
- SEP
- Springbuk
- STAR Bank
- Stellar
- Subaru
- The Engineered Innovation Group
- Transcend Consulting
- UKG
- Vespa Group
- Wunderkin
- Xclogenics

INDUSTRY-WIDE FOUNDATIONAL COMPETENCIES

Below, please find a list of top foundational competencies within the IT industry. Foundational competencies are defined as core competencies that provide a foundation for success in school and in the world of work. Nationally, employers have identified a link between foundational competencies and job performance and, foundational competencies are often a prerequisite for workers to learn new industry-specific competencies. Foundational competencies are broken down into three categories as defined below:



INFORMATION TECHNOLOGY: INDUSTRY-WIDE FOUNDATIONAL COMPETENCIES

PERSONAL EFFECTIVENESS COMPETENCIES

These competencies are essential for all life roles such as being a member of a family, a community, and a larger society. These "soft skills" are increasingly valued in the labor market.

- **Interpersonal Competencies:** Displaying competencies to work effectively with others from diverse backgrounds.
- **Professionalism:** Maintaining a professional presence when working with clients and partners, and on social media that aligns with company culture.
- **Adaptability:** Displaying the capability to adapt to new, different, or changing requirements.
- **Lifelong Learning:** Demonstrating a commitment to self-development and improvement of knowledge and competencies.
- **Integrity:** Displaying strong moral principles and work ethic.
- **Initiative:** Exercising a self-starter orientation and a commitment to effective job performance by taking action on one's own and following through to get the job done.
- **Dependability:** Displaying responsible behaviors at work including completing work on time and being persistent in seeing issues through to resolution.
- **Humility:** Willingness to learn, adapt and be mentored by senior staff.

EDUCATION COMPETENCIES

These are critical competencies primarily learned in an academic setting, as well as cognitive functions and thinking styles. These competencies are likely to apply to all organizations in a single industry or be represented by an industry association nationwide.

- **Communication:** Listening, speaking, and signaling so others can understand using a variety of methods, including hearing, speech, American Sign Language, instant messaging, text-to-speech devices, etc.
- **Basic Computer Competencies:** Using Information Technology and related applications, including adaptive devices and software, to convey and retrieve information.
- **Critical & Analytical Thinking:** Using logical thought processes to analyze information and draw conclusions.
- **Reading:** Understanding written sentences, paragraphs, and figures in work-related documents on paper, on computers, or adaptive devices.
- **Writing:** Using standard business English to compile information and prepare written documents on paper, computers, or adaptive devices.
- **Mathematics:** Using mathematics to express ideas and solve problems.
- **Science & Technology:** Using scientific rules and methods to express ideas and solve problems on paper, on computers, or on adaptive devices.

WORKPLACE COMPETENCIES

These represent competencies and abilities that allow individuals to function in an organizational setting.

- **Problem Solving/Decision Making:** Generating, evaluating, and implementing solutions to problems.
- **Leadership:** Managing and leading team members to successful outcomes in the workplace.
- **Teamwork:** Working cooperatively with others to complete work assignments, especially while utilizing collaborative software.
- **Scheduling/Coordinating:** Making arrangements that fulfill all requirements as efficiently and economically as possible.
- **Customer Focus:** Efficiently and effectively addressing the needs of clients/customers.
- **Instruction/Teaching:** Teaching others how to do something.
- **Detail Orientation:** Being accurate and thorough in review and development of work materials/content.
- **Creative Thinking:** Generating innovative and creative solutions.

INFORMATION TECHNOLOGY

IT SUPPORT TECHNICIAN

JOB DESCRIPTION	Provide technical assistance to computer users. Answer questions or resolve computer problems for clients in person, or via telephone or electronically. May provide assistance concerning the use of computer hardware and software, including printing, installation, word processing, electronic mail, and operating systems.
KEY FOUNDATIONAL COMPETENCIES	Verbal and Written Communication, Emotional Intelligence, Adaptability, Problem-Solving/Decision Making, Leadership, Initiative, Detail Orientation, Time Management, Active Listening, Read and Understand Logic, Collaborative and Teamwork, Risk Taking, Mentorship

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
TECH SUPPORT: INFRASTRUCTURE Uses components of commonly used computer hardware, software, applications, etc.; diagnoses customer problems; and provides troubleshooting and issue resolution support.	Provide technical assistance to computer users. Answer questions or resolve computer problems for clients in person, or via telephone or electronically. May provide assistance concerning the use of computer hardware and software, including printing, installation, word processing, electronic mail, and operating systems.	Troubleshoots basic issues and identifies resolution tasks. Track-specific examples: • Server: The server is out of hard drive space. • Network: A jack is giving erroneous information. • Desktop: There are errors in end-user applications (e.g., Outlook is crashing).	Troubleshoots and effectively resolves basic to moderate infrastructure issues with confirmation from the customer that the issue has been resolved.
IT/HARDWARE Assembles, configures, installs; maintains, and repairs computer and device hardware and IT systems.	Describes how to properly install and connect hardware. Track-specific: • Server: Describes how to connect servers. • Network: Describes how to connect and integrate hardware to network. • Desktop: Connects and tests work stations including computers cables, and docking stations.	Installs, connects, and tests hardware. Track-specific: • Server: Connects, configures, and tests server hardware. • Network: Connects, integrates, and tests hardware to network. • Desktop: Repairs individual parts or components within a computer/ device.	Track-specific: • Server: Repairs individual parts of an IT server. Performs routine maintenance or standard repairs to hardware components or equipment. • Network: Performs routine maintenance or standard repairs to network components or equipment. • Desktop: Troubleshoots and repairs failed hardware for end-user computers/ devices.
CORE OPERATING SYSTEMS Demonstrates familiarity with the use of multiple operating systems (e.g., Apple, Microsoft, Android, Linux) for computer and mobile devices and installs, configures, and maintains at least one of those operating systems.	Navigates and uses operating systems (e.g., Apple, Microsoft Windows, Android, Linux, iOS). Track-specific: • Server: Windows or Linux • Network: may navigate and use multiple OSs • Desktop: Microsoft, Android, and Apple, Chrome	Installs and configures operating systems Addresses individual user issues and assists with issues of larger scope. Track-specific: • Network: Configures OSs, does not install.	Configures, optimizes, and maintains (e.g., patching or security updates), and troubleshoots operating systems for a larger scope of IT systems (e.g., a section or department of computers in a company).

INFORMATION TECHNOLOGY

IT SUPPORT TECHNICIAN

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
SOFTWARE APPLICATIONS Installs, configures, and maintains a wide variety of software applications.	Demonstrates ability to use basic application menus and functions. Track-specific: • Server: Active Directory (Windows), IIS (web server) • Network: IT support applications; Cloud and SaaS • Desktop: Business productivity such as MS Office Suite (end-user)	Installs, performs initial configuration, and tests a wide variety of software applications specific to their track (server, network, or desktop).	Performs advanced configuration and maintains and enhances a wide variety of software applications.
GENERAL NETWORKING TOOLS AND CONCEPTS (NETWORK ONLY) Provides network support with commonly used tools/devices, including: routers, switches, wireless, ethernet cabling, and firewalls; manages IP addresses and runs cabling.	Provides basic network support using common diagnostic devices (e.g., WireShark, Cisco switches). Describes OSI layers, WAN, and LAN.	Repairs and replaces cabling and most networking hardware (e.g., routers, switches, wireless, and firewalls).	Track-specific: • Server: Repairs individual parts of an IT server. Performs routine maintenance or standard repairs to hardware components or equipment. • Network: Performs routine maintenance or standard repairs to network components or equipment. • Desktop: Troubleshoots and repairs failed hardware for end-user computers/devices.
GENERAL INFORMATION SECURITY Installs, configures, troubleshoots, tests, and maintains in a secure manner the portion of the IT environment under their responsibility (networks, communication, hardware, software, and other devices) to ensure confidentiality, integrity, and availability.	Describes how to properly secure the portion of the IT infrastructure in their area of responsibility. Track-specific: • Server: Describes how to protect and secure server, hardware, and operating systems. • Network: Describes how to protect and secure network hardware. • Desktop: Describes how to protect and secure end-user work stations including computers and devices.	Documents security measures and adheres to risk, compliance, and company policy.	Implements and documents security measures. Aids in recovery when problems arise (e.g. eradicates a virus, solves for a hard drive crash). Analyzes security scans and implements remediation action steps (e.g., security patching).

INFORMATION TECHNOLOGY

IT SUPPORT TECHNICIAN

SALARY RANGE	**Entry Level:** $36,000 - $60,000	**Advanced Level:** $60,000 - $75,000
CREDENTIALS	**Required:** Career and technical education training. Some employers require a certification or an associate degree in Information Technology or related field; or short-term certificates/ credentials	**Optional/Dependent on Specialty:** Some employers may require a certification or associate's degree. **License:** FCC License (useful, not required) **Certifications:** A wide range of certifications may be considered for this role, such as Microsoft Technology Associate (MTA) CompTIA A+, Net +, Security +, CCNET, and Specific Product/Vendor Certifications
WORK EXPERIENCE	**Entry Level:** 0-3 years	**Advanced Level:** 3 -5 years
OTHER JOB TITLES/ROLES	Computer Specialist, Computer Support Specialist, Computer Technician, Desktop Support Technician, Help Desk Analyst, Help Desk Technician, Information Technology Specialist (IT Specialist), Network Technician, Support Specialist, Technical Support Specialist, Residential Installation and Service Technician	

INFORMATION TECHNOLOGY

ASSOCIATE/JUNIOR DEVELOPER

JOB DESCRIPTION	Under the direction of a developer, Associate/Junior Developer are heavily involved in programming by implementing simple code or modifying established applications. They may be responsible for responding to client support requests by investigating, analyzing, debugging, and rectifying simple issues. They gather user needs to develop and maintain software solutions and work within a team to design and complete projects.
KEY FOUNDATIONAL COMPETENCIES	Verbal and Written Communication, Emotional Intelligence, Problem Solving/Decision Making, Leadership, Initiative, Detail Orientation, Time Management, Listening, Read and Understand Logic, Collaborative and Teamwork, Risk Taking, Mentorship

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
SOFTWARE DEVELOPMENT BEST PRACTICES Understands software assurance best practices and their use in software development.	Uses version control.	Describes multiple vulnerabilities and how to prevent them when designing applications (e.g., encryption, SQL injection, CAPTCHA). Describes object- oriented principles such as encapsulation or polymorphism. Describes the value of a design pattern. Manages version control (e.g., branching, merging). Participates in code reviews and implements techniques to prevent vulnerabilities (e.g., encryption, CAPTCHA).	Troubleshoots and effectively resolves basic to moderate infrastructure issues with confirmation from the customer that the issue has been resolved.
CORE CODING LANGUAGES Develops simple frontend, backend and/or mobile applications utilizing core coding languages (e.g., Java, C#, Objective C, JavaScript, Swift) on a development platform; integrates data storage (including SQL), libraries, methods, interfaces, and objects and uses code analysis and debugging techniques; web developers need to be able to integrate HTML, CSS, web services (including REST), and a web framework (such as Angular or Spring MVC) into applications.	Codes simple software tasks or routines in support of software development work. May create simple web pages. Able to create and execute unit tests.	Develops prototypes that can be used by a supervisor/senior software developer. Contributes to research and development processes. Creates applications leveraging object-oriented techniques that can be reliably used by a customer in production. Integrates data storage (including SQL), libraries, methods, interfaces, and objects.	

INFORMATION TECHNOLOGY

ASSOCIATE/JUNIOR DEVELOPER

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
WEB DEVELOPMENT Understands commonly used web development languages such as AJAX, XML, HTML 5,and JavaScript.	Describes and uses the web development language of HTML. Builds an application using HTML, JavaScript, and JSON/XML.	Builds an application using HTML, JavaScript, and JSON/XML. Uses at least one Common framework (e.g., Twitter Bootstrap, Angular, React.js, or Spring MVC, Vue.js.).	
GENERAL DATABASE Uses SQL basics (e.g., selecting, inserting, updating, deleting records), at least one database management software application, and database fundamentals such as normalization, schemas, and relationships.	Describes CRUD operations and at least one type of database (e.g. document, relational). Uses database concept (e.g., tables, columns, rows, schema, relationships, indexes).	Designs document, relational, or other schema(tables, stored procedures, etc.) components. Performs SQL CRUD operations with at least one database management software application.	
SOFTWARE DEVELOPMENT TOOLS Utilizes an IDE (Integrated Development Environment) (e.g., Visual Studio) and a source control system such as TFS or GitLab.	Utilizes an IDE to write code, perform version control, and debug simple software issues. Able to use a source control system such as TFS or GitLab.	Debugs more complex software issues. Incorporates libraries and frameworks into base code solutions. Utilizes available features inside IDE such as unit testing automation and environment management.	
DESIGN AND IMPLEMENTATION Assists customers in the gathering of requirements, and designs, implements, and supports simple technology solutions to existing business problems.	Describes a software development life cycle (SDLC).	Assists customers to elicit and document customer requirements.	

INFORMATION TECHNOLOGY

ASSOCIATE/JUNIOR DEVELOPER

SALARY RANGE

Entry Level: $70,000 - $80,000

TECHNOLOGIES

- Access software
- Accounting software
- Analytical or scientific software
- Application server software
- Backup or archival software
- Business intelligence and data analysis software
- Communications server software
- Computer aided design CAD software
- Configuration management software
- Content workflow software
- Customer Relationship Management CRM software
- Database management system software
- Database reporting software
- Database user interface and query software
- Data mining software
- Development environment software
- Document management software
- Electronic mail software
- Integrated Development Environment (e.g., Visual Studio)
- Enterprise resource planning ERP software
- Enterprise system management software
- Software Development Life Cycle Methodologies [Agile]
- File versioning software

CREDENTIALS

Required:

Boot camp or Coding Academy for most employers

Some employers require an associates or Bachelor's degree in Computer Science, Information Science or related field

Optional/Dependent on Specialty: Certifications in specific software programs

Certifications:

- CIO Certifications
- Project Management
- ITIL (Entry)
- Certified Associate in PM
- (CAPM) - Entry Professional (PMP)

WORK EXPERIENCE

Entry Level: 0-2 years

OTHER JOB TITLES/ROLES

.NET Developers, Statistical Programmers, Programmers, Software Developers, Front End Developers, Game Programmers, Application Developers, SAS Programmers

INFORMATION TECHNOLOGY

SOFTWARE DEVELOPER

JOB DESCRIPTION	Develop, create, and modify general computer applications software or specialized utility programs. Analyze user needs and develop software solutions. Design software or customize software for client use with the aim of optimizing operational efficiency. May analyze and design databases within an application area, working individually or coordinating database development as part of a team. May mentor other software developers/coders, particularly if interested in a management path.
KEY FOUNDATIONAL COMPETENCIES	Verbal and Written Communication, Emotional Intelligence, Problem Solving/Decision Making, Role Ownership & Leadership, Proactivity, Detail Orientation, Innovation, Presentation Competencies, Troubleshooting, Craftsmanship/Quality

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
SOFTWARE DEVELOPMENT AND DESIGN	Develop software system testing and validation procedures, programming, and documentation. Allow existing software to adapt to new hardware, or to improve its performance by modifying to correct errors. Develop Web sites. Develop Web applications.	Direct software system testing and validation procedures, programming, and documentation. Strong familiarity with object-oriented development. Ensure specifications are met by coordinating software system installation and monitoring equipment functioning. Able to craft code in a way to support maintainability and extension. Provides mentoring of less experienced software engineers.	Write, analyze, review, and rewrite programs, using workflow charts and diagrams, and applying knowledge of computer capabilities, subject matter, and symbolic logic. Architect, design, develop and modify software systems by using scientific analysis, design patterns, high level architectural practices, and mathematical models to predict and measure outcome and consequences of design.
CORE CODING LANGUAGES	Develops simple frontend, backend applications utilizing core coding languages (e.g., Java, C#, Objective C, JavaScript, Swift) web developers need to be able to integrate HTML, CSS, web services (including REST), and a web framework (such as Angular or Spring MVC) into applications.	Develops complex frontend, backend and/or mobile applications utilizing core coding languages (e.g., Java, C#, Objective C, JavaScript, Swift). Build development platform; integrates data storage (including SQL), libraries, methods, interfaces, and objects. Performs code reviews to apply standards and support quality in code base.	Uses code analysis and debugging techniques. Designs architecture for development and execution by other software engineers.

INFORMATION TECHNOLOGY

SOFTWARE DEVELOPER

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
SOFTWARE PROGRAM ANALYSIS AND TESTING	Convert workflow charts and diagrams into a series of instructions coded in a computer language. Conduct trial runs of programs and software applications to be sure they will produce the desired information and that the instructions are correct. Write unit tests to ensure correct functioning of application.	Prepare detailed workflow charts and diagrams that describe input, output, and logical operation. Perform systems analysis and programming tasks to maintain and control the use of computer systems software as a systems programmer. Investigate whether networks, workstations, the central processing unit of the system, or peripheral equipment are responding to a program's instructions.	Perform scalability and load testing of applications. Design and implement continuous integration environments to run automated testing as software developers extend the functionality of an application.
DATA ANALYSIS	Store, retrieve, and manipulate data for analysis of system capabilities and requirements.	Analyze information to determine, recommend, and plan computer specifications and layouts, and peripheral equipment modifications.	Determine system performance standards.
SOFTWARE DEVELOPMENT TOOLS	Utilizes an IDE (Integrated Development Environment) (e.g., Visual Studio) and a source control system such as TFS or GitLab.	Proficient in the use of an IDE.	Capable of helping a company to select a new IDE.
SOFTWARE PROGRAM MANAGEMENT & DOCUMENTATION	Correct errors by making appropriate changes and rechecking the program to ensure that the desired results are produced. Perform revision, repair, or expansion of existing programs to increase operating efficiency or adapt to new requirements. Write, update, and maintain computer programs or software packages to handle specific jobs such as tracking inventory, storing or retrieving data, or controlling other equipment. Compile and write documentation of program development and subsequent revisions, inserting comments as needed in the coded instructions so others can understand the program.	Direct revision, repair, or expansion of existing programs to increase operating efficiency or adapt to new requirements.	Assist in architectural decisions and help structure teams of software developers to achieve desired results.

INFORMATION TECHNOLOGY

SOFTWARE DEVELOPER

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
FEASIBILITY ANALYSIS			Determine feasibility of design within time and cost constraints by analyzing user needs and software requirements.
RISK MANAGEMENT, SECURITY & INFORMATION ASSURANCE	Understand and implement cybersecurity protocols and protections. Protect data, software, and hardware by implementing network security measures.	Protect data, software, and hardware by planning network security measures.	Understand the importance of risk testing and quality assurance best practices. Protect data, software, and hardware by coordinating network security measures.

INFORMATION TECHNOLOGY

SOFTWARE DEVELOPER

SALARY RANGE	**Entry Level:** $66,000 - $95,000	**Advanced Level:** $95,000 - $168,000
TECHNOLOGIES	• Access software, Accounting software • Analytical or scientific software, Application server software • Backup or archival software, intelligence and data analysis software • Communications server software • Computer aided design CAD software • Configuration management software • Content workflow software • Customer relationship Business management CRM software • Database management system software	• Database reporting software • Database user interface and query software • Data mining software • Development environment software • Document management software • Electronic mail software • Enterprise application integration software • Enterprise resource planning ERP software • Expert system software • File versioning software
CREDENTIALS	**Required (Software Developer):** Some employers require Bachelor's degree in Computer Science, Software Engineering or related field; Master's degree in Computer Science or related field **Preferred:** Some years of experience in the field	**Optional/Dependent on Specialty:** Associate degree in computer science, or software engineering technology or software systems engineering. Certificates in Computer Programming, SQL, Database Management, or other specific programming language, Security/PCI Compliance, A+, Net +, Security +, CCNA, CCNP, Cloud Architect, Specific Product/Vendor Certifications **Certifications:** Web Development, DevOps, Mobile Development or Technical Stack, C++IEE Professional Software Developer Certification (or license), Agile Cert (9 or 12 Credit), CompTIA Project+, CAPM, Microsoft SQL, Microsoft Solutions, Google Suite, AWS Suite, Scrum Master, ASQ, Microsoft Azure, Project Management Professional Certification
WORK EXPERIENCE	**Entry Level:** 1-3 years	**Advanced Level:** 3-5 years
OTHER JOB TITLES/ROLES	Software Engineers (Senior), Software Developer, Systems Engineers, DevOps Engineers, Front End Software Engineers, Full Stack Developers, Data Engineers, .NET Developers, Full Stack Software Engineers, Lead Software Engineers, Cloud Engineer, Service Desk Engineer, Systems Engineer	

INFORMATION TECHNOLOGY

BUSINESS/DATA ANALYST

JOB DESCRIPTION	Conduct organizational studies and evaluations, design systems and procedures, conduct work simplification and measurement studies, conduct business intelligence and data analyses, prepare operations and procedures reports. Includes program analysts and management consultants.
KEY FOUNDATIONAL COMPETENCIES	Written and Verbal Communications, Problem Solving/Decision Making, Systems Analysis, Detail Orientation, Initiative, Consulting

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
BUSINESS MANAGEMENT PRINCIPLES	Knowledge of principles governing business management methods such as strategy planning, methods of efficient production, people and resources coordination.	Knowledge of elaborate methodologies through which a company markets and sells a product or service to generate income.	Ability to apply methodologies.
GATHER INFORMATION AND REQUIREMENTS	Can gather Information & Requirements, Document project requirements, analyze the data to the best of their ability, work internally with an Emerging or Proficient peer to identify gaps requirements.	Experience gathering and clarifying project requirements. Operates more independently.	Experience with applying systematic research methods and communicating with relevant parties in order to find specific information and evaluate research results to assess the information's relevance.
PERFORM BUSINESS ANALYSIS	Able to document business needs.	Perform research on business needs and gather competitive business domain data.	Familiarity with evaluating the condition of a business on its own and in relation to the competitive business domain, performing research, placing data in context of the business' needs and determining areas of opportunity.

INFORMATION TECHNOLOGY

BUSINESS/DATA ANALYST

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
INTERPRET BUSINESS INFORMATION/DATA ANALYSIS	Collect data and statistics.	Uses collected data and statistics to test and evaluate in order to generate assertions and pattern predictions, with the aim of discovering useful information in a decision-making process. Retrieve and analyze different kinds of information with regards to the management of a business in order to draw conclusions on projects, strategies, and developments.	Presentation of information in digestible format and making information usable.
PROVIDE IMPROVEMENT STRATEGIES	Can document root causes and the problems associated.	Identify root causes of problems and submit proposals for effective and long-term solutions.	Analyze and adapt existing business operations in order to set new objectives and meet new goals and future goals.
RECOMMEND CHANGES	Document findings of study.	Prepare recommendations for implementation of new systems, procedures, or organizational changes.	Design, evaluate, recommend, and approve changes of forms and reports present findings to stakeholders.
STATISTICAL ANALYSIS	Experience with software used for analytics, business intelligence, data management, and predictive analytics (e.g., Tableau).	Knowledge of the study of statistical theory, methods and practices such as collection, organization, analysis, interpretation and presentation of data. It deals with all aspects of data including the planning of data collection in terms of the design of surveys and experiments in order to forecast and plan work-related activities.	Present findings to stakeholders.
DEVELOP AND TRACK METRICS	Experience with gather, report, analyze. Need to be liaison between IT + biz.	Create key metrics for a project to help measure its success.	Understands how metrics are likely to drive behavior and how to appropriately balance metrics.

INFORMATION TECHNOLOGY

BUSINESS/DATA ANALYST

SALARY RANGE	**Entry Level:** $55,000 - $80,000 (depending on region and employer)	
TECHNOLOGIES	• Business intelligence and data analysis software • Accounting software • Data visualization software • Enterprise resources planning ERP • Database user interface and query software	• Customer relationships management • Database management system • Database reporting software
CREDENTIALS	**Required:** Bachelor's degree	**Optional/Dependent on Specialty - Certifications:** • Certified Management Consultant (CMC) • Certified Business Analyst • Certified Data Scientist-Foundation • BI Certs (more employer specific)
WORK EXPERIENCE	**Entry Level:** 0-3 years	
OTHER JOB TITLES/ROLES	Administrative Analyst, Business Analyst, Employment Programs Analyst, Leadership, Management Analyst, Management Consultant, Consultant, Program Management Analyst, Quality Control Analyst	

INFORMATION TECHNOLOGY

PROJECT MANAGER

JOB DESCRIPTION	Project managers ensure that a project is completed on time, within budget, and that its objectives are met. They oversee the project, manage the team, ensure the most efficient resources are used and ensure that all parties involved are satisfied.
KEY FOUNDATIONAL COMPETENCIES	Verbal Communications, Leadership, Detail Orientation, Management, Innovative, Consulting, Organization, Problem Solving/Decision Making, Research/ Presenting, Planning, Influencing, Mentorship, Time Management.
SOFTWARE & HARDWARE TOOLS	**Analytics:** Ability to use business analysis and data analysis tools. Ability to use data visualization tools. (E.g., Tableau) **Customer Feedback/Testing:** Ability to use one or more customer feedback/testing tools (e.g., Aha! Ideas, Formstack, Google Form, Typeform) **Design, Prototyping & Wireframing:** Ability to use design and wire-framing tools (e.g,, Axure, Figma, Flaticon, Framer) **User Experience Testing:** Adobe Target, Contentsquare, FullStory, Helio, Hotjar, Lookback, UXCam

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
INITIATING A PROJECT	Can create draft project charters.	Can create draft project charters Understands key stakeholder needs. Can identify high-level risk, assumptions and constraints. Assures project is aligned with organizational objectives and customer needs.	Creates scope statements that reflect organization and customer needs and expectations (Describe project goals, outcomes, results and implementation scenarios). Can gain buy-in for project charters. Ability to manage multiple project workstreams.
PLANNING A PROJECT	Can establish change management processes. Can develop a quality and risk plan.	Can develop a project schedule and plan (Knowledge to produce accurate calculations on time necessary to fulfill future technical tasks based on past and present information and observations or plan the estimated duration of individual tasks in a given project). Define the workplan, duration, deliverables, resources and procedures a project has to follow to achieve its goals. Can develop a budget, cost management and resource allocation plan.	Gains agreement on project scope and deliverables. Can form and align a project team with clear roles and responsibilities. Driving a team to make decisions.

INFORMATION TECHNOLOGY PROJECT MANAGER

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
EXECUTING A PROJECT	Gains material resources as needed.	Schedule team work and activities, give instructions, motivate and direct the workers to meet the company objectives. Leads project teams and members working in a team or individually, to maximize their performance and contribution. Successfully manages quality and risk. Manages stakeholder and team member expectations through project.	Can successfully guide team and stakeholders through execution of project plan and achievement of goals. Gains understanding of business goals, process flows and understands project components, identifying dependencies and risks, motivating project team members to meet deliverables.
CLOSING A PROJECT	Follows formal project close out process. Releases project resources.	Lessons learned analyzed and recorded for future projects.	Gains acceptance of all outcomes by project stakeholders. Remediation plan for what went well/ didn't go well.
MONITORING AND COORDINATING A PROJECT	Tracks project using standard PM toolset and keep all stakeholders clearly and reliably informed.	Identify areas for improvement and make suggestions to achieve this.	Risks and quality managed to optimize project outcomes. Project team managed. (Monitor and measure how an employee undertakes their responsibilities and how well these activities are executed.) Lead a group of people to help them achieve goals and maintain an effective working relationship among staff.

INFORMATION TECHNOLOGY

PROJECT MANAGER

SALARY RANGE	**Entry Level:** $68,000 - $74,000	**Advanced Level:** $93,000 - $154,000
TECHNOLOGIES	• Projec • Road Mapping & Tracking • Product Backlog Management • User storyboarding • User experience testing • Collaboration tools • Project management tools • User Analytics	
CREDENTIALS	**Required:** Bachelor's degree in Business or Master's degree in Business Administration or related field, Certified Scrum Master & Product Owner	**Optional/Dependent on Specialty - Certifications:** • PMI Agile Certified Practitioner • Project Management Professional Certification • Certified Power Quality Professional • Salesforce Certification
WORK EXPERIENCE	**Entry Level:** 3-5 years	
OTHER JOB TITLES/ROLES	Product Owners, Software Product Managers, Software Product Owners, Digital Product Managers, Marketing Product Managers	

INFORMATION TECHNOLOGY PRODUCT OWNER

JOB DESCRIPTION	Evaluate and research market and competitors during product development, develop strategies and tactics while cross coordinating with other departments, establish production processes, prioritization, and overseeing each step of development from conception to launch.
KEY FOUNDATIONAL COMPETENCIES	Verbal Communications, Leadership, Detail Orientation, Management, Problem Solving, Innovative, Consulting, Organization, Problem Solving/Decision Making, Research/Presenting, Planning, Influencing, Mentorship, Time Management
SOFTWARE & HARDWARE TOOLS	**Analytics:** Amplitude, Domo, Gainsight, Geckoboard, GoodData, Google Analytics, Heap, Looker, Mixpanel, Segment, Tableau **Customer Feedback/Testing:** Aha! Ideas, Formstack, Google Forms, Survey Monkey, Typeform **Design & Wireframing:** Axure, Figma, Flaticon, Framer, InVision, Mockingbird, Moqups, Sketch, UXPin **User Experience Testing:** Adobe Target, Contentsquare, FullStory, Helio, Hotjar, Lookback, UXCam **Software Development:** Aha! Develop, Azure DevOps, Jira, PivotalTracker, Rally
RISK MANAGEMENT, SECURITY & INFORMATION ASSURANCE	**Client Expectations:** Ensure that products are developed with reasonable client expectations, and at a reasonable cost to the business. **Security:** Maintain security of company's internal and customer data, and confidentiality of products under development

INFORMATION TECHNOLOGY PRODUCT OWNER

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
MARKET KNOWLEDGE	• Has knowledge of the existing customer base and desired customers for the product or feature • Understanding of where the market is headed • Lead Focus group, interview, and survey development	• Product Knowledge • Technical Knowledge	Ability to manage workflow and usability of product and consumer behavior psychology
PRODUCT MANAGEMENT COMPETENCIES	• Effective meeting design and facilitation • Ability to establish and evangelize a product or feature vision • Value metrics capability • Exceptional research and communication competencies • Customer and product knowledge • Agile development practices • Validation competencies such as beta testing • Basic data modeling, JSON, XML, working knowledge of relational and non-relational databases. SQL, REST APIs, processing data using Python, etc. • Broad understanding of usability, usability testing, usability heuristics. Ability to communicate to the user experience team using a common language • Working knowledge of applications to support storyboards, personas, and wireframes such as Figma or Miro	• Build revenue, pricing, and adoption models. Micro/ macroeconomics • Experiment design and analysis. Statistics • Experience with various analytics tools, and business intelligence tools. Know what you're looking for, and where to find it. • Conduct effective customer/user interviews	• Mapping and understanding complex competitive, partner, and customer ecosystems. Complexity and systems thinking. Domain research • Understanding and identifying competitive advantages
BUSINESS COMPETENCIES AND AWARENESS	• Managing Products as a Business • Creating and communicating product or feature vision, value proposition, and validation outcomes • Strategic understanding of how the product or features meets business strategy. • Ability to interact with customers to understand business problems.	• Building Business Cases • Product Marketing Competencies • Analytical Competencies	• Can successfully demonstrate Pricing Competencies

INFORMATION TECHNOLOGY

PRODUCT OWNER

SALARY RANGE	**Entry Level:** $68,000 - $74,000	**Advanced Level:** $93,000 - $154,000
TECHNOLOGIES	• Product Prototyping & Wireframing • Road Mapping & Tracking • Product Backlog Management • User storyboarding • User experience testing • Collaboration tools • Project management tools • User Analytics	
CREDENTIALS	**Required:** Bachelor's degree in Business or Master's degree in Business Administration or related field, Certified Product Owner with scrum.org	**Optional/Dependent on Specialty - Certifications:** • PMI Agile Certified Practitioner • Project Management Professional Certification • Certified Power Quality Professional • Salesforce Certification
WORK EXPERIENCE	**Entry Level:** 3-5 years	**Advanced Level:** 10+ years
OTHER JOB TITLES/ROLES	Product Owners, Software Product Managers, Software Product Owners, Digital Product Managers, Marketing Product Managers	

INFORMATION TECHNOLOGY

CYBERSECURITY SPECIALIST

JOB DESCRIPTION	Using the NIST Cybersecurity Framework (Identify, Protect, Detect, Respond, Recover), a cybersecurity specialist plans, implements, and monitors hardware and/or software security measures for information systems and operational infrastructures.
KEY FOUNDATIONAL COMPETENCIES	Integrity, Initiative, Dependability, Communication, Basic Computer Competencies, Logic, Critical & Analytical Thinking, Science & Technology, Problem Solving & Decision Making, Teamwork, Detail Orientation.

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
COMPUTER NETWORK DEFENSE Defensive measures to detect, respond, and protect information, information systems, and networks from threats.	Understand the motivation and processes of a bad actor who is gathering information on a network.	Apply techniques to prevent social engineering and tools of bad actors to detect and access network information.	Troubleshoot and diagnose while effectively utilizing detection tools to defend the network.
INFORMATION ASSURANCE Methods and procedures that protect information systems and data by ensuring their availability, authentication, confidentiality, and integrity as well as the measure of common controls on information systems.	Understand the concept of data integrity and encryption as well as maintaining data consistency processes and procedures.	Implement the methodologies and security policies using encryption algorithms to maintain data integrity and data consistency.	Enforce assisting and developing, enforce security policy for data consistency.
INFORMATION SYSTEMS / NETWORK SECURITY Methods, tools, and procedures, including development of information security plans to prevent information systems vulnerabilities and to provide or restore security of information systems and network services.	Understand network and data system function, architecture, and topology.	Implement defense-in-depth using intrusion detection and prevention systems (IDPS), firewall, Access Control List (ACL).	Evaluating and validating host/ network security systems and maintain policy.
INFRASTRUCTURE DESIGN Architecture and typology of software, hardware, and networks, including LANS, WANS, and telecommunications systems, their components and associated protocols and standards, and how they operate and integrate with one another and with associated controlling software.	Understand the Transmission Control Protocol [TCP] and Internet Protocol [IP], Open System Interconnection Model [OSI], and different protocols that are used in each layer.	Implement different tools at different layers and how to use the protocols tp analyze traffic flow on virtual and physical layers.	Detecting intrusions to analyze and mitigate vulnerabilities in the network topology including hacking techniques to find weaknesses in protocols and improve bandwidth through routing protocols.
VULNERABILITIES ASSESSMENT Principles, methods, and tools for assessing vulnerabilities and developing or recommending appropriate mitigation countermeasures.	Understand vulnerability of hardware and software using tools and methodologies to evaluate physical, virtual, and social environments.	Assess vulnerabilities of hardware and software using tools and methodologies to evaluate physical, virtual, and social environments.	Remedy and provide guidance to correct the vulnerabilities of the physical, virtual, and social environments.

INFORMATION TECHNOLOGY

CYBERSECURITY SPECIALIST

SALARY RANGE	$50,200-$127,590	
CREDENTIALS	**Required:** High School Diploma **Preferred:** Associate's degree, Bachelor of Science degree **Note: Certain educational attainment levels are required depending on company and/or government opportunity	**Optional/Dependent on Specialty:** Certifications addressing authentication, security testing, intrusion detection/prevention, incident response and recovery, attacks and countermeasures, cryptography, malicious code countermeasures, system security, network infrastructure, access control, cryptography, assessments and audits, organizational security
WORK EXPERIENCE	**Entry Level:** 1-2 years	
TECHNOLOGIES	Data base user interface and query software, Development environment software, Network monitoring software, Transaction security and virus protection software, Computer networking technologies, Cloud operating technologies, Database systems and scripting, Development environment software, Operation systems, Network and system logging, Network monitoring software	
OTHER JOB TITLES/ROLES	Continuous Diagnostics and Mitigation Specialist, Continuous Monitoring Specialist, Cyber Defense Engineer / Administrator, Cyber Tool Engineer / Administrator, Disaster Recovery / Emergency Management Specialist, Intrusion Detection System Administrator / Technician, Network Security Specialist / Engineer, Systems Security Administrator / Engineer, Embedded Systems Security, Information Security Specialist	

INFORMATION TECHNOLOGY

BUSINESS DEVELOPMENT REPRESENTATIVE

JOB DESCRIPTION	Expand the company's customer base and sell technical products through a combination of market research, networking, and outreach.
KEY FOUNDATIONAL COMPETENCIES	Interpersonal Competencies, Adaptability, Initiative, Communication, Basic Computer Competencies, Critical & Analytical Thinking, Problem Solving & Decision Making, Active Listening

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
SALES PROCESS Knowledge of principles and methods for showing, promoting, and selling products or services. This includes marketing strategy and tactics, product tours, sales techniques, and sales controls systems.	Understand value of the product and/or service.	Effectively use a discovery call process.	Design, redesign, and adapt a sales process.
RELATIONSHIP MANAGEMENT Developing constructive and cooperative working relationships with internal and external individuals, and manage internal processes.	Sees the need to establish internal and external relationships.	Establish internal and external relationships.	Consistently establishes internal and external relationships.
SELF-AWARENESS Individual's tendency to examine their thoughts, motives, and behaviors, and how those influence the world around them.	Recognizes the importance of examining their thoughts, motives, and behaviors, began to apply basic habits and tools for self-awareness.	Started to consistently stop themselves to assess their thoughts, motives and behaviors, to how those influence the world around them, and making changes to how they interact.	Consistently stop and examine themselves to assess their thoughts, motives and behaviors, to how those influence the world around them, and act with intent.

INFORMATION TECHNOLOGY

BUSINESS DEVELOPMENT REPRESENTATIVE

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
CUSTOMER FOCUS Knowledge of principles and processes for providing customer and personal services. This includes customer needs assessment, meeting quality standards for services, and evaluation of customer satisfaction.	Awareness of and basic application of principles and processes for providing customer and personal services with recognized errors and self or guided correction.	More fluidity and application of principles and processes for providing customer and personal services with minimal errors.	Consistent application of principles and processes for providing customer and personal services meeting quality standards for services and evaluation of customer satisfaction.
SALES PRESENTATION Application of principles and methods for showing, promoting, and selling products or services.	Understanding and use of showing, promoting, and selling products through multimedia elements and tools with coaching and support.	Receive and answer questions relating to the showing, promoting, and selling of company products using multimedia elements and tools addressing customer needs with minimal errors.	Deep product knowledge to receive and address questions for the showing, promoting, and selling of company products with high accuracy and use of multimedia elements and tools tailored to customer needs independently.
QUALIFYING LEADS Evaluating a prospect's needs and assessing whether their solution could effectively address that.	Using an interview script to actively listen to a business's needs to understand if the company solution is viable.	Guide the conversation, surface a prospect's needs, and help them see the solution as a possible option on their own.	Guiding more fluidly and more accurately assessing the prospect's needs, moving qualifying leads to the top, mindful of body posture and non verbal cues, nuances of language, and pauses.

INFORMATION TECHNOLOGY

BUSINESS DEVELOPMENT REPRESENTATIVE

SALARY RANGE	**Entry Level:** Base Salary $40,000 -$70,000, On-target earnings $90,000 - $110,000	**Advanced Level:** Base Salary $50,000 -$86,000, On-target earnings $110,000 - $135,000
TECHNOLOGIES	• Customer relationship management CRM software • Data base user interface and query software • Enterprise resource planning ERP software • Video conferencing software • Word processing software	
CREDENTIALS	**Required:** High School Diploma **Preferred:** Associate's or Bachelor's degree	
WORK EXPERIENCE	**Entry Level:** 0 years	
OTHER JOB TITLES/ROLES	Sales Development Representative, Sales Representatives, Account Representative, Inside Salesperson	

INFORMATION TECHNOLOGY

SALESFORCE ADMINISTRATOR

JOB DESCRIPTION	Help users to get the most out of Salesforce technology by working with stakeholders to define system requirements, customize the platform, and stay updated on the platform's new tools, capabilities, and updates as well as third party solutions.
KEY FOUNDATIONAL COMPETENCIES	Project Management, Business Analysis, Stakeholder Engagement, End User Enablement, Lifelong Learning, Adaptability, Initiative, Dependability, Basic Computer Competencies, Critical & Analytical Thinking, Problem Solving & Decision Marking, Teamwork, Communication (written/verbal)

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
SALESFORCE PLATFORM Knowledge of the Salesforce Platform, understanding use cases for the platform, Salesforce architecture, and navigating setup, power up with AppExchange.	With coaching and support, describe the capabilities of activity management, Salesforce Mobile App, features of Chatter, and identify use cases for AppExchange applications.	With minimal errors, describe the capabilities of activity management, Salesforce Mobile App, features of Chatter, and identify use cases for AppExchange applications.	Independently describe the capabilities of activity management, Salesforce Mobile App, features of Chatter, and identify use cases for AppExchange applications.
DATA MANAGEMENT Create processes to ensure data in Salesforce is managed correctly.	With coaching and support, create processes to ensure data in Salesforce is managed correctly.	With minimal errors, create processes to ensure data in Salesforce is managed correctly.	Independently, create processes to ensure data in Salesforce is managed correctly.
DATA ANALYSIS Provide reporting on a regular basis to help users and executives gain insights and make decisions from Salesforce data.	With coaching and support, provide reporting on a regular basis to help users and executives gain insights and make decisions from Salesforce data.	With minimal errors, provide reporting on a regular basis to help users and executives gain insights and make decisions from Salesforce data.	Independently, provide reporting on a regular basis to help users and executives gain insights and make decisions from Salesforce data.
CHANGE MANAGEMENT Manage changes to business processes, technology, and people within Salesforce.	With coaching and support, manage changes to business processes, technology, and people within Salesforce.	With minimal errors, manage changes to business processes, technology, and people within Salesforce.	Independently, manage changes to business processes, technology, and people within Salesforce.

INFORMATION TECHNOLOGY

SALESFORCE ADMINISTRATOR

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
PROCESS AUTOMATION Create, maintain, and enhance automated business processes.	With coaching and support, create, maintain, and enhance automated business processes.	With minimal errors, create, maintain, and enhance automated business processes.	Independently, create, maintain, and enhance automated business processes.
PRODUCT MANAGEMENT Manage the end-to-end implementation of Salesforce, including the overall strategy and day-to-day activities involved in administering Salesforce.	With coaching and support, manage the end-to-end implementation of Salesforce, including the overall strategy and day-to-day activities involved in administering Salesforce.	With minimal errors, manage the end-to-end implementation of Salesforce, including the overall strategy and day-to-day activities involved in administering Salesforce.	Independently, manage the end-to-end implementation of Salesforce, including the overall strategy and day-to-day activities involved in administering Salesforce.
SECURITY MANAGEMENT Proactively set up processes to manage and protect customer and business data.	With coaching and support, proactively set up processes to manage and protect customer and business data.	With minimal errors, proactively set up processes to manage and protect customer and business data.	Independently, proactively set up processes to manage and protect customer and business data.

INFORMATION TECHNOLOGY

SALESFORCE ADMINISTRATOR

SALARY RANGE	**Entry Level:** $64,000 - $87,000	**Advanced Level:** $87,000 - $105,000
TECHNOLOGIES	• Salesforce Platform • Email Automation • Accounting Software • Document Management Software	
CREDENTIALS	**Sometimes Required:** Salesforce Certified Associate **Required:** Salesforce Administrator Certification	
WORK EXPERIENCE	**Entry Level:** Salesforce Work Experience, targeting 0-6 months paid Salesforce experience	
OTHER JOB TITLES/ROLES	CRM Manager, CRM Product Owner, System Administrator	

INFORMATION TECHNOLOGY

CLOUD ADMINISTRATOR

JOB DESCRIPTION	Analyze, test, troubleshoot, and evaluate the cloud systems landscape; understanding what resources are available; utilize IAM (Identity and Access Management) controls allowing systems or people to access cloud environment; optimizing the configuration and performance of existing resources and services, recommending new ones to improve efficiency with minimal interruption.
KEY FOUNDATIONAL COMPETENCIES	Adaptability, Integrity, Initiative, Communication, Critical & Analytical Thinking, Science & Technology, Problem Solving & Decision Making, Teamwork, Detail Orientation, Leadership

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
AGILE METHODOLOGY Type of project management process where demands and solutions evolve through the collaborative effort of self-organizing and cross-functional teams and their customers.	Learn with teams and discover project solutions, delivery, and current processes with coaching and supports.	Introduce forecasting and time estimation, earn independence in novice tasks, understand cloud landscape to identify items that need improvement.	Drive change, create additional tasks, scope out and find the correct team members to work with to accomplish the tasks from start to end, familiar and create project plans and possibly, report to leadership strategic ways to improve systems.
CLOUD SERVICES PLATFORM Wide range of resources delivered on demand to customers over the Internet managed by cloud computing providers.	Understand and evaluate cloud systems landscape.	Deploy cloud systems and support clients in deploying those resources and services in cloud, expanding cloud systems footprints under direction.	Produce improvements to existing systems and able to estimate/suggest changes to existing cloud systems landscape.
AUTOMATION Use of technology that performs tasks with reduced human assistance in order to unite cloud management processes (e.g. Kubernetes, Docker).	Learn what the automation work flow is and what it currently does.	Learn how to modify, improve, and/or build automation.	Propose automation solutions to improve the cloud system landscape.
SOFTWARE ENGINEERING Process of analyzing user requirements and then designing, building, testing, and releasing software application which will satisfy those requirements.	Learn how to build software for client, what their processes are, how they build software there, with coaches or partner with other engineers, define requirements, learning how to translate user needs into software application with coaches and/or partner with other engineers.	Create software on your own, with coaches and/or partner with other engineers, drive requirements from user needs, follow software development pipeline (design, build, test, release).	Identify areas that need improvement as the business/customer needs change, create the project management line to support the changes needed from a software perspective.

INFORMATION TECHNOLOGY

CLOUD ADMINISTRATOR

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
CORE CODING LANGUAGES Uses programming and scripting languages to create automations, integrations, and customizations; Utilizing core coding languages (e.g., Java, C#, Objective C, JavaScript, Swift, Python) on a cloud stack; integrates data storage, libraries, methods, interfaces, data serialization (e.g., YAML, JSON).	Codes simple software & application tasks or routines in support of software & application configuration work. May create simple web pages. Able to create and execute unit tests. Use programming and scripting languages to create automations, integrations, and customizations under supervision.	Developing programs and configurations to be used in production environments. Contributes to research and development processes. Use programming and scripting languages to create automations, integrations, and customizations independently.	Defining and driving forward a standard language and tools for others use it in the same manner.
DEVELOPER TOOLS Understanding and use of DevOps tooling for coding, deploying, and testing (e.g., Jenkins, Chef, Terraform, Ansible).	Learn and practice the DevOps life cycle.	Deploy the full DevOps life cycle.	Discover, plan, and implement the DevOps life cycle.
CODE REPOSITORIES Understanding and use of software collaborative tooling to accomplish tasks and projects (e.g., GitHub, JIRA, GitLab, BitBucket, Azure DevOps Repos).	Learn the company's software they use for storing code, how to interact locally and remotely, code versioning, and check-in/check-out.	Create new repositories, update existing repositories, and automate remote code interactions.	Drive and manage the repository tools of choice, complete code reviews of code submissions, maintain the repository state and resiliency.

INFORMATION TECHNOLOGY

CLOUD ADMINISTRATOR

SALARY RANGE	**Entry Level:** $55,000 - $80,000	**Advanced Level:** $70,000 - $100,000
TECHNOLOGIES	• Configuration management software • Network monitoring software • Presentation software • Transaction security and virus protection software • Automated Management System Infrastructure • Resource Operations Tooling • Patching Software • Network Monitoring Services • Technical Design Presentation • Vulnerability protection software	
WORK EXPERIENCE	**Entry Level:** 0-6 months	
CREDENTIALS	**Required:** High School Diploma **Sometimes Required:** Associate's degree, Bachelor's degree	**Optional/Dependent on Specialty - Certifications:** Amazon Web Services Cloud Practitioner Certification (AWS CPC), AWS Solutions Architect, AWS SysOps, AWS DevOps, Azure Fundamentals (900), Azure AZ-104, Microsoft Azure Administrator, Google Cloud Platform, Oracle Cloud Infrastructure
OTHER JOB TITLES/ROLES	Cloud Developer, Cloud Practitioner, Cloud Associate, Cloud Project Leader, Cloud Systems Leader	

INFORMATION TECHNOLOGY

CLOUD ENGINEER

JOB DESCRIPTION	A Cloud Engineer is an IT specialist who excels in designing, implementing, and maintaining cloud-based systems, ensuring they meet business requirements and integrate seamlessly. This role demands proficiency in building, securing, and automating cloud infrastructure, making the Cloud Engineer a key architect of digital infrastructure. Their expertise combines scalability and security, with a focus on scripting and automation tools, essential for driving transformation engagements effectively. Collaboration is central to this role, requiring effective communication with developers, system experts, and stakeholders to align goals, achieve positive ROI, and simplify user experiences. A well-rounded skill set in People, Processes, and Technology is crucial, alongside deep expertise in at least one major platform like AWS or Salesforce. To be successful, a Cloud Engineer must cover extensive ground, blending technical know-how with strategic collaboration.
KEY FOUNDATIONAL COMPETENCIES	Basic Computer Competencies, Communication, Critical & Analytical Thinking, Customer Focus, Dependability, Humility, Initiative, Integrity, Lifelong Learning, Mathematics, Problem Solving/Decision Making, Professionalism, Reading, Science & Technology, Teamwork and Writing.

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
CLOUD COMPUTING CONCEPTS Understand the different cloud computing models, services, and technologies. This includes areas such as infrastructure as a service (IaaS), platform as a service (PaaS), software as a service (SaaS), virtualization, containers and serverless computing.	Has a basic understanding of cloud computing concepts and terminology.	Can explain the different cloud computing models (IaaS, PaaS, SaaS) and their benefits.	Can design and implement cloud-based solutions for a variety of applications.
CLOUD INFRASTRUCTURE MANAGEMENT Provision, manage, and maintain cloud infrastructure resources such as virtual machines, storage, and networks. This includes areas such as capacity planning, performance monitoring and troubleshooting.	Can perform basic tasks such as provisioning and managing virtual machines.	Can troubleshoot and resolve common cloud infrastructure issues.	Can automate cloud infrastructure tasks using Infrastructure as Code (IaC) tools.
CLOUD SECURITY Protect cloud-based applications and data from unauthorized access, use, disclosure, disruption, modification, or destruction. This includes areas such as identity and access management, data encryption and vulnerability management.	Is aware of the security risks associated with cloud computing.	Can implement basic security measures to protect cloud-based applications and data.	Can design and implement a comprehensive cloud security strategy.
CLOUD NETWORKING Design, implement and manage cloud-based networks. This includes areas such as subnet design, routing, and firewall configuration.	Has a basic understanding of cloud networking concepts.	Can configure cloud-based networks for a variety of applications.	Can troubleshoot and resolve complex cloud networking issues.

INFORMATION TECHNOLOGY

CLOUD ENGINEER

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
CLOUD STORAGE Design, implement and manage cloud-based storage solutions. This includes areas such as storage object lifecycle management, data replication and disaster recovery.	Can create and manage cloud storage buckets.	Can implement efficient data storage strategies for cloud-based applications.	Can optimize cloud storage costs.
CLOUD MONITORING AND LOGGING Collect, monitor, and analyze cloud-based data to identify and resolve issues. This includes areas such as metric collection, event monitoring and log analysis.	Can set up basic monitoring and logging for cloud-based applications.	Can troubleshoot and resolve application issues using monitoring and logging data.	Can implement comprehensive monitoring and logging solutions for complex cloud-based systems.
DEVOPS Implement and automate software development and delivery processes. This includes areas such as continuous integration and continuous delivery (CI/CD), infrastructure as code (IaC) and container orchestration.	Has a basic understanding of DevOps principles and practices.	Can use DevOps tools to automate software delivery processes.	Can integrate cloud computing into DevOps workflows.
CLOUD ARCHITECTURE PROFICIENCY Demonstrates deep understanding of cloud architecture principles, including infrastructure components, services, and deployment models. Proficient in designing, implementing, and managing secure, scalable and cost-effective cloud solutions.	Limited understanding of cloud architecture principles, basic knowledge of infrastructure components (e.g., VMs, storage).	Developing comprehension of cloud infrastructure concepts, can design and implement simple cloud solutions.	Mastery in designing and implementing scalable, secure, and cost-efficient cloud architectures for diverse workloads.
AUTOMATION AND SCRIPTING SKILLS Possesses advanced skills in automation tools and scripting languages like Python, Bash or Ansible. Can automate routine tasks, build complex automation workflows, and integrate automation into DevOps pipelines.	Basic knowledge of automation tools and scripting languages (e.g., Python, Bash), can automate basic tasks with simple scripts.	Growing proficiency in using automation tools for routine tasks, can build and manage complex automation workflows.	Advanced scripting skills to automate complex processes, develop reusable scripts, and integrate automation into DevOps pipelines.

INFORMATION TECHNOLOGY CLOUD ENGINEER

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
USER-CENTRIC APPROACH Champions user experience and prioritizes building user-friendly cloud solutions. Conducts user research, designs intuitive interfaces, and ensures positive user interactions with cloud-based applications and services.	Limited focus on user needs and experience, primarily focuses on technical aspects.	Developing awareness of user-centric design principles, starts incorporating user feedback into cloud solutions.	Prioritizes user-friendly solutions, conducts user research, designs intuitive interfaces, and ensures positive user experiences.
PROFICIENCY ACROSS PEOPLE, PROCESSES, AND TECHNOLOGY Possesses a holistic understanding of the interconnectedness between people, processes, and technology within cloud environments. Actively contributes to optimizing team collaboration, improving workflows, and aligning technology with organizational needs.	Limited understanding of the interconnected nature of people, processes, and technology within cloud environments.	Grasping the interconnectedness of organizational elements, starting to contribute to process improvements and technology alignment.	Demonstrates a comprehensive understanding of the cloud ecosystem, actively contributes to optimizing people, processes, and technology alignment for maximum efficiency.
PLATFORM MASTERY Demonstrates deep expertise in a specific cloud platform (e.g., AWS and Azure). Can effectively navigate and optimize the chosen ecosystem, troubleshoot issues, and leverage platform-specific best practices for efficient cloud resource management.	Limited familiarity with the chosen platform, struggles with basic navigation and configuration tasks.	Developing skills in utilizing platform features for specific tasks, can deploy and manage basic cloud resources.	Expertise in leveraging platform capabilities, effectively navigating, and optimizing the chosen ecosystem, contributes to platform-specific best practices.
ADAPTABILITY AND BROAD SKILL SET Thrives in dynamic environments and readily adapts to new technologies and challenges. Possesses a broad skill set encompassing various cloud technologies and related domains. Continuously seeks learning opportunities to stay ahead of the curve.	Limited adaptability, struggles with diverse challenges and new technologies.	Growing ability to adapt to new technologies and challenges, demonstrates willingness to learn and expand skillset.	Highly adaptable, possesses a broad skill set in cloud technologies and related domains, excels in navigating diverse and complex scenarios, actively seeks new learning opportunities.

INFORMATION TECHNOLOGY

CLOUD ENGINEER

SALARY RANGE	**Entry Level:** $60,000-$90,000 per year	**Advanced Level:** $110,000-$240,000 per year
TECHNOLOGIES	• Cloud Platforms • Infrastructure as a Service (IaaS) • Platform as a Service (PaaS) • Software as a Service (SaaS) • Containerization • Cloud Automation Tools • Cloud Monitoring and Logging Tools • Cloud Security Tools • DevOps and Agile Methodologies • Scripting Languages	
WORK EXPERIENCE	**Entry Level:** 1-2 years	
CREDENTIALS	**Required:** High School Diploma **Sometimes Required:** Associates degree, Bachelors degree	**Optional/Dependent on Specialty - Certifications:** Microsoft Azure Fundamentals Certificate, Amazon Web Services (AWS) Certified Solutions Architect - Associate, Microsoft Azure Solutions Architect Expert, Google Associate Cloud Engineer, CompTIA Cloud+, VMware Cloud Foundation – Certified Cloud Engineer (VCCF-CE), Google Professional Cloud DevOps Engineer, Certified Cloud Security Professional (CCSP)
OTHER JOB TITLES/ROLES	Cloud Solutions Architect, Cloud DevOps Engineer, Cloud Security Engineer, Cloud Site Reliability Engineer (SRE) ,Cloud Network Engineer Cloud Storage Engineer, Cloud Automation Engineer, Cloud Cost Optimization Engineer, Cloud Infrastructure Engineer, Cloud Platform Engineer, DevOps Engineer ,IT Infrastructure Engineer, IT Operations Engineer, IT Systems Enginee,r Network Engineer, Security Enginee,r Site Reliability Engineer ,(SRE) Solutions Architect Systems Engineer ,Technical Consultant	

INFORMATION TECHNOLOGY

DATA SCIENTIST

JOB DESCRIPTION	Data Scientists use computer science, statistics, and mathematics to apply machine learning, predictive modeling, and statistical analysis to extract insights and aid decision-making about complex digital data, such as website usage, sales, logistics and customer engagement. Responsibilities include gathering and cleaning data, choosing suitable models and algorithms, and presenting findings through effective data visualization and communication. Data Scientists must make data-driven decisions by identifying trends, patterns, and relationships. They must have domain expertise to align efforts with business objectives and strategic goals, strong problem-solving skills and collaborative abilities, and must continuously learn about new technologies and techniques. Data Scientists must possess technical expertise and social skills that enable them to explain complex analyses, articulate data caveats and communicate with diverse audiences. They must be able to discern appropriate right questions and to understand client needs to creatively and efficiently solve problems. Necessary skills include the ability to understand problems, identify data that provides solutions, experiment with models and deploy them through data and software engineering techniques. Data Scientists must effectively explain their methodology and interpretations with teams, ensuring a comprehensive understanding of data usage and model results. Specialization in a specific data type, like healthcare data, adds value by bringing deeper insight into analyses.
KEY FOUNDATIONAL COMPETENCIES	Adaptability, Analytical and Critical Thinking, Basic Computer Competencies, Communication Skills, Creative Thinking, Customer Focus, Dependability, Detail Orientation, Humility, Initiative, Instruction/Teaching Abilities, Integrity, Interpersonal Competencies, Leadership, Lifelong Learning, Mathematics, Problem Solving and Decision-Making, Professionalism, Reading, Science and Technology Understanding, Scheduling and Coordinating, Teamwork and Writing Skills.

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
DATA ANALYSIS AND VISUALIZATION Involves the ability to collect, process and analyze data to extract insights. This competency requires proficiency in statistical analysis and the use of visualization tools to create understandable and actionable graphs and charts. It also includes the translation of data findings into clear visual stories that can inform business decisions	Can perform basic descriptive and inferential statistical analysis. Can create basic visualizations of data.	Can perform more advanced statistical analysis and data mining techniques. Can create complex and informative visualizations of data.	Can apply a wide range of statistical and data mining techniques to solve complex problems. Can create highly effective and insightful visualizations of data.
DATA MODELING AND MACHINE LEARNING Design, implementation, and validation of predictive models that can learn from past data to forecast future trends, behaviors, and outcomes. It requires an understanding of machine learning algorithms and data modeling techniques, and the ability to apply these in various scenarios to support decision-making processes	Can understand and apply basic machine learning algorithms.	Can build and train more complex machine learning models.	Can develop and deploy state-of-the-art machine learning models to solve real-world problems.

INFORMATION TECHNOLOGY

DATA SCIENTIST

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
DATA WRANGLING AND CLEANING Data wrangling and cleaning are about transforming and mapping data from its raw form into another format with the intent of making it more appropriate and valuable for a variety of downstream purposes. This process includes cleaning data to ensure accuracy, completeness, and consistency, which is crucial for reliable analysis	Can clean and prepare data for analysis.	Can handle more complex data wrangling tasks, such as dealing with missing values and outliers.	Can automate data wrangling and cleaning processes using tools and techniques like data pipelines.
DOMAIN EXPERTISE Domain expertise refers to in-depth knowledge and understanding of the specific field or industry in which the data scientist operates. It involves grasping the nuances, trends, and key performance indicators of the domain, which is critical to applying data science techniques effectively and to ensuring that the insights generated are relevant and actionable within that context.	Has a basic understanding of the domain in which they are working.	Can apply their data science skills to solve specific problems in their domain.	Has deep expertise in their domain and can use data science to drive innovation and decision-making.

INFORMATION TECHNOLOGY

DATA SCIENTIST

SALARY RANGE	**Entry Level:** $65,000-$95,000	**Advanced Level:** $120,000-$160,000
TECHNOLOGIES	• Python • R • SQL • Scikit-learn • TensorFlow • PyTorch • Pandas • Matplotlib • Seaborn • Apache Hadoop • Apache Spark • Cloudera • Amazon Web Services (AWS) • Microsoft Azure • Google Cloud Platform (GCP)	
WORK EXPERIENCE	**Entry Level:** 0-2 years	
CREDENTIALS	**Required:** High School Diploma **Often Required:** Bachelors degree related to Data Science	**Optional/Dependent on Specialty - Certifications:** IBM Data Science Professional Certificate, Google Data Analytics Individual Qualification (GAIQ), Microsoft Certified: Data Scientist Associate, CompTIA Data+, Cloudera Certified Associate Data Scientist, SQL Essential Training, Python for Data Science and Machine Learning, Machine Learning Foundations, Introduction to Natural Language Processing (NLP), Data Visualization with Python
OTHER JOB TITLES/ROLES	Business Intelligence Analyst, Data Analyst, Data Engineer, Machine Learning Engineer, Data Mining Specialist, Quantitative Analyst, Statistician, Business Analyst, Data Architect, Analytics Consultant, Research Scientist, Data Science Manager, Big Data Engineer, AI Engineer, and Advanced Analytics Professional.	

INFORMATION TECHNOLOGY

AI/MACHINE LEARNING ENGINEER

JOB DESCRIPTION

An Artificial Intelligence (AI)/Machine Learning (ML) Engineer is a specialized professional who plays a pivotal role in developing and implementing algorithms and predictive models that enable machines to learn and make decisions with minimal human intervention. This role This role is technical and involves a strategic understanding of how AI/ML solutions can be integrated and leveraged within an organization. It demands a profound understanding of AI/ML frameworks, strong programming skills and the ability to handle large, complex datasets. Responsibilities encompass the entire lifecycle of AI/ ML systems, including data preprocessing, model building, training, fine-tuning and deployment. AI/ML engineers continuously monitor and update models to ensure optimal performance, integrate AI capabilities into various applications and products, and work collaboratively with cross-functional teams that include Data Scientists, Data Engineers, and Product Managers. Collaboration is crucial for effectively implementing machine learning features within broader systems. To excel in this field, an AI/ML Engineer must have a robust foundation in mathematics, statistics and programming and must stay abreast of developments within the rapidly evolving AI landscape. Continuous learning is essential for improving the intelligence and efficiency of AI/ML models and ensuring they remain at the forefront of technological advancement.

KEY FOUNDATIONAL COMPETENCIES

Creativity, Critical Thinking, Customer Focus, Dependability, Detail Orientation, Leadership, Lifelong Learning, Mathematics, Problem-Solving, Professionalism, Reading, Science & Technology, Scheduling, Teamwork and Writing.

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
MACHINE LEARNING FOUNDATIONS Understanding the core principles and algorithms that enable machines to learn from and make predictions based on data. It includes supervised, unsupervised, and reinforcement learning techniques.	Understands the fundamental concepts of machine learning, including supervised learning, unsupervised learning, reinforcement learning, and deep learning.	Can apply machine learning algorithms to solve simple problems.	Can independently design and implement machine learning solutions for complex problems.
SOFTWARE ENGINEERING This focuses on the application of engineering principles to the design, development, maintenance, testing, and evaluation of software and systems that make computers or anything containing software work.	Proficient in at least one programming language, such as Python or R, and has a basic understanding of software design principles and algorithms.	Can develop and maintain machine learning software applications.	Can design, develop, and deploy scalable and maintainable machine learning software systems.
MATHEMATICS AND STATISTICS Centered around the use of mathematical models and techniques, and statistical knowledge to analyze data and solve problems in a variety of contexts, particularly in predicting outcomes and uncovering patterns.	Possesses a strong foundation in mathematics, including linear algebra, calculus, and probability.	Can apply mathematical and statistical techniques to machine learning problems.	Can independently analyze and interpret complex mathematical and statistical data in the context of machine learning.

INFORMATION TECHNOLOGY

AI/MACHINE LEARNING ENGINEER

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
DATA ANALYSIS AND MODELING This involves extracting insights from data. It encompasses designing models that can analyze complex data sets to inform strategic decision-making, and the use of tools and techniques for data mining, evaluation, and the presentation of data findings.	Can perform data cleaning, preparation, and exploration tasks.	Can build and train basic machine learning models using existing libraries and tools.	Can independently design, develop, and evaluate complex machine learning models.
UNDERSTANDING OF AI/ML CONCEPTS This involves the knowledge and comprehension of artificial intelligence and machine learning principles. It ranges from basic understanding of key concepts and algorithms to a deep, proficient grasp of complex AI/ML techniques and the ability to innovate in this field.	Basic knowledge of key AI/ML concepts, such as types of machine learning (supervised, unsupervised). Understanding of simple algorithms like linear regression.	Solid grasp of a wider range of algorithms, including decision trees and SVMs. Beginning to understand neural networks and their applications.	Deep understanding of complex algorithms, including deep learning and reinforcement learning. Ability to innovate and adapt algorithms to new problems.
PROGRAMMING SKILLS This focuses on the ability to use programming languages, primarily in the context of AI and ML development. It covers a range from basic proficiency in languages like Python or R for simple tasks to advanced software engineering skills necessary for building robust AI/ML systems.	Competent in Python or R for basic tasks and analytics. Familiarity with data manipulation using Pandas or similar libraries.	Proficient in multiple programming languages, efficient in writing optimized code, and handling larger datasets. Experience with ML libraries like TensorFlow or PyTorch.	Expert in software engineering practices, capable of designing and developing robust, scalable, and efficient systems integrating AI/ML components.
DATA HANDLING This pertains to the skills required for effective data management and processing. It includes basic data preprocessing and feature engineering, advancing to complex data manipulation and expertise in handling big data technologies and real-time data streams.	Basic data preprocessing skills, such as handling missing values and basic feature engineering.	Advanced data manipulation skills, including complex feature engineering and experience with big data technologies.	Mastery in data engineering, capable of designing and implementing sophisticated data pipelines and handling real-time data streams.

INFORMATION TECHNOLOGY

AI/MACHINE LEARNING ENGINEER

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
MODEL DEVELOPMENT AND EVALUATION This area involves the skills necessary for creating and assessing AI/ML models. It encompasses the ability to develop simple models and understand basic performance metrics, progressing to the expertise in building sophisticated, efficient, and ethically sound models, along with a deep understanding of model validation and interpretability.	Ability to develop and evaluate simple models. Basic understanding of model performance metrics.	Developing more sophisticated models, including tuning hyperparameters. Good understanding of model validation techniques and bias-variance tradeoff.	Expert in model development, capable of building highly accurate, efficient, and robust models. Deep understanding of model interpretability and ethical implications.

INFORMATION TECHNOLOGY

AI/MACHINE LEARNING ENGINEER

SALARY RANGE	**Entry Level:** $70,000-$95,000	**Advanced Level:** $115,000-$180,000
TECHNOLOGIES	• Python • R • Matplotlib • Seaborn • Apache Hadoop • Cloudera • Amazon Web Services (AWS) • Microsoft Azure • Google Cloud Platform (GCP) • Cloud Automation Tools • Cloud Monitoring and Logging Tools	• DevOps and Agile Methodologies • Scripting Languages • Machine Learning Frameworks: TensorFlow, PyTorch, Keras, Scikit-learn • Data Processing and Analysis Tools: SQL, Pandas, NumPy, Apache Spark • Deep Learning Architectures: Neural networks, Convolutional Neural Networks (CNNs), • Recurrent Neural Networks (RNNs), Transformers • Version Control and Collaboration Tools: Git, GitLab, GitHub • Containerization and Orchestration: Docker, Kubernetes • MLOps Tools: Model versioning, monitoring, deployment, orchestration, management frameworks
WORK EXPERIENCE	**Entry Level:** 3-4 years	
CREDENTIALS	**Required:** Bachelors degree **Sometimes Required:** Masters or Doctorate degree	**Optional/Dependent on Specialty - Certifications:** AWS Certified Solutions Architect - Associate, Microsoft Azure Fundamentals, Google Associate Cloud Engineer, IBM Applied AI Professional Certificate, Introduction to Machine Learning (Deeplearning.ai), Machine Learning Foundations with TensorFlow on Coursera, Practical Deep Learning for Coders, Natural Language Processing (NLP) with Python, Computer Vision with Python, Machine Learning Engineering for Production (MLOps)
OTHER JOB TITLES/ROLES	Data Scientist, Deep Learning Engineer, NLP Scientist, Computer Vision Engineer, Algorithm Engineer, Research Scientist in AI, Applied Machine Learning Scientist, Quantitative Researcher, Data Mining Specialist, AI Research Scientist, Senior Software Engineer, and Statistical Machine Learning Expert.	

INFORMATION TECHNOLOGY

DEVOPS ENGINEER

JOB DESCRIPTION	DevOps Engineers focus on shortening the system development life cycle and delivering high-quality software. The role includes coding, infrastructure management, system administration, and the rapid deployment of software updates. DevOps Engineers automate and optimize processes, manage Continuous Integration (CI) and Continuous Delivery (CD) pipelines, ensure system reliability and handle version control. DevOps Engineers work closely with developers, system operators and other Information Technology (IT) staff to oversee code releases and deployments and play a critical role in creating a collaborative environment where the creation, testing and release of software can happen rapidly, frequently and reliably.
KEY FOUNDATIONAL COMPETENCIES	Adaptability, Basic Computer Competencies, Communication, Creative Thinking, Critical & Analytical Thinking, Customer Focus, Dependability, Detail Orientation, Humility, Initiative, Integrity, Leadership, Lifelong Learning, Mathematics, Problem Solving/Decision Making, Professionalism, Reading, Science & Technology, Scheduling/Coordinating, Teamwork and Writing

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
INFRASTRUCTURE AND CONFIGURATION MANAGEMENT Involves the ability to manage and provision computing infrastructure through code instead of through manual processes, along with the maintenance and adjustment of these systems over time.	Can understand and apply basic infrastructure and configuration management concepts. Can use tools like Ansible or Chef to automate infrastructure provisioning and configuration.	Can effectively manage complex infrastructure and configuration tasks using a variety of tools and techniques. Can design and implement infrastructure as code (IaC) solutions.	Possesses deep expertise in infrastructure and configuration management. Can automate complex infrastructure workflows and develop innovative IaC solutions to meet evolving business needs.
CONTINUOUS INTEGRATION AND CONTINUOUS DELIVERY (CI/CD) This refers to the practices of merging all developer working copies to a shared mainline several times a day and ensuring that the software can be reliably released at any time, enhancing the quality and speed of development.	Understands the fundamentals of CI/CD and can implement basic CI/CD pipelines using tools like Jenkins or GitLab CI/CD.	Can design and implement CI/CD pipelines for complex applications, including multi-stage pipelines and automated testing. Can troubleshoot and optimize CI/CD pipelines for performance and reliability.	Has a comprehensive understanding of CI/CD principles and best practices. Can lead the development and implementation of enterprise-grade CI/CD pipelines that support rapid and reliable software delivery.
CONTAINERIZATION AND ORCHESTRATION Containerization involves encapsulating or packaging software code along with all its dependencies so that it can run uniformly and consistently on any infrastructure. Orchestration is the automated management of these containers, ensuring they interact efficiently and scale up or down as needed.	Familiar with containerization technologies like Docker and understands the basics of container orchestration with Kubernetes.	Can deploy and manage containerized applications using Kubernetes. Can troubleshoot and optimize containerized applications for performance and scalability.	Possesses deep expertise in containerization and orchestration technologies. Can design and implement complex Kubernetes clusters and develop containerization strategies for various applications.

INFORMATION TECHNOLOGY DEVOPS ENGINEER

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
CLOUD TECHNOLOGIES Understanding and utilizing various cloud services and infrastructure (such as AWS, Azure, or GCP) to build, deploy and manage applications and services through the cloud.	Has a basic understanding of cloud computing concepts and can use cloud platforms like AWS or Azure for basic tasks.	Can design, implement, and manage cloud-based infrastructure and applications. Can effectively utilize cloud services for cost optimization and scalability.	Possesses in-depth knowledge of cloud architectures and services. Can lead cloud migration projects and implement cloud-native solutions that align with business objectives.
MONITORING AND ALERTING Involves the ongoing observation of IT services, infrastructure and application performance, and the automated notification of stakeholders when issues or anomalies are detected. This ensures high availability and performance of services.	Can implement basic monitoring and alerting systems to track system performance and identify potential issues.	Can design and implement comprehensive monitoring and alerting solutions to ensure system health and performance. Can proactively identify and resolve potential problems before they impact users.	Has a deep understanding of monitoring and alerting techniques. Can develop custom dashboards and alerting systems to provide real-time insights into system behavior and performance.

INFORMATION TECHNOLOGY

DEVOPS ENGINEER

SALARY RANGE	**Entry Level:** $70,000-$90,000	**Advanced Level:** $115,000-$140,000
TECHNOLOGIES	• Terraform • Ansible • Chef • Puppet • Docker • Kubernetes • Docker Swarm • Jenkins • GitLab CI/CD • Azure DevOps Pipelines • Prometheus • Grafana • Nagios • PagerDuty • Python • Bash • PowerShell • Git • Mercurial • Amazon Web Services (AWS) • Microsoft Azure • Google Cloud Platform (GCP)	
WORK EXPERIENCE	**Entry Level:** 0-2 years	
CREDENTIALS	**Required:** High School Diploma **Sometimes Required:** Associate or Bachelor degree	**Optional/Dependent on Specialty - Certifications:** Google's DevOps Fundamentals: Site Reliability Engineering, AWS Certified DevOps Engineer – Professional, Microsoft Certified Solutions Expert for Azure DevOps Solutions, Certified Kubernetes Application Developer (CKAD), Hashicorp Certified Terraform Associate
OTHER JOB TITLES/ROLES	Automated Testing Engineer, CI/CD Specialist, Cloud Engineer, Configuration Engineer, DevOps Consultant, DevOps Manager, Infrastructure Engineer, IT Automation Engineer, IT Operations Engineer, Release Engineer, SRE (Site Reliability Engineer), Software Development Engineer in Test (SDET), Technical Project Manager	

INFORMATION TECHNOLOGY

FULL STACK DEVELOPER

JOB DESCRIPTION

Full Stack Developers design, develop and maintain comprehensive software solutions, typically for the web. This includes creating user interfaces, developing servers and databases and coding for mobile platforms. Required skills include proficiency in programming languages like JavaScript, HTML, and CSS, and server-side languages such as Python, Ruby, Java, and .NET, as well as experience in database technologies like MySQL, Oracle, and MongoDB. Full Stack Developers must balance multiple projects in a fast-paced environment, collaborate effectively with user experience and user interface designers (UX and UI), software engineers and other team members. Full Stack Developers are problem-solvers able to devise practical and innovative solutions who can articulate technical processes to non-technical stakeholders and stay current with developments in web applications and programming languages. Full Stack Developers may not have the specialized proficiency of a front-end or back-end developers, but must possess a broad skill set enabling them to handle various aspects of software development. This 'jack of all trades' approach is pivotal in creating seamless, user-friendly, and robust applications. The role is well-suited for self-starters eager to learn, grow and commit to producing high-quality software solutions.

KEY FOUNDATIONAL COMPETENCIES

Adaptability, Analytical Thinking, Basic Computer Competencies, Communication, Creative Thinking, Critical Thinking, Customer Focus, Dependability, Detail Orientation, Humility, Initiative, Instruction/Teaching, Integrity, Interpersonal Competencies, Leadership, Lifelong Learning, Mathematics, Problem Solving/Decision Making, Professionalism, Reading, Scheduling/Coordinating, Science & Technology, Teamwork and Writing

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
FRONT-END DEVELOPMENT This involves creating the user interface and experience of a website or application. Front-end developers work with design and technology to ensure that users can interact with the site or app effectively. They use languages like HTML, CSS, and JavaScript to build the layout, design, and interactivity of a website.	Can understand and apply basic HTML, CSS, and JavaScript concepts. Can create simple websites and web pages using these technologies.	Can effectively utilize HTML, CSS, and JavaScript to create responsive, user-friendly websites and web applications. Can implement advanced front-end features and techniques.	Possesses deep expertise in front-end technologies and frameworks. Can design and develop complex, high-performance web applications that meet user needs and business objectives.
BACK-END DEVELOPMENT This refers to server-side development and deals with the application's database and infrastructure. Back-end developers write server scripts and APIs that power the site or app's core functionality. They work with server languages like PHP, Ruby and Python and frameworks like Node.js.	Can understand and apply basic server-side programming concepts. Can develop simple web applications using a server-side programming language like Python or Java.	Can effectively utilize server-side programming languages and frameworks to build robust and scalable web applications. Can handle data processing, data validation, and database interactions.	Possesses deep expertise in server-side technologies and architectures. Can design and implement complex web services, APIs, and microservices. Can optimize back-end performance and security.
DATABASE MANAGEMENT This involves creating, updating and managing the databases that store data for websites, applications and systems. Database managers ensure the performance, integrity, and security of databases. They often work with SQL-based systems like MySQL and PostgreSQL, and NoSQL databases like MongoDB.	Can understand basic database concepts and SQL queries. Can perform basic data manipulation and retrieval operations.	Can effectively design, implement, and manage databases for web applications. Can optimize database performance and ensure data integrity.	Possesses deep expertise in database technologies and best practices. Can design and implement complex database models to meet the data requirements of web applications. Can handle large-scale data processing and ensure data security.

INFORMATION TECHNOLOGY

FULL STACK DEVELOPER

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
APPLICATION LOGIC AND ARCHITECTURE Designing the structured framework and logical flow of an application. It involves planning how the application will work and how different components will interact with each other, focusing on the core algorithmic logic and the overall system design.	Can understand and apply basic application architecture concepts. Can design and develop simple web applications with a clear separation of concerns.	Can effectively design and implement modular, maintainable, and scalable web applications. Can apply design patterns and best practices to ensure application quality and performance.	Possesses deep expertise in software architecture and design principles. Can design and implement complex, distributed web applications that meet business requirements and scalability needs. Can apply microservices and cloud-native architecture principles.
TESTING AND DEBUGGING Testing is the process of evaluating software to find and fix defects. Debugging is the process of locating and resolving bugs or defects in software code that prevent correct operation. This includes unit testing, integration testing, and using tools to ensure code quality and reliability.	Can understand and apply basic testing concepts. Can perform basic unit testing and manual testing of web applications.	Can effectively implement and utilize testing frameworks and tools to ensure the quality and functionality of web applications. Can perform automated testing, integration testing, and performance testing.	Possesses deep expertise in testing methodologies and best practices. Can design and implement comprehensive testing strategies to ensure the reliability, security, and performance of web applications. Can effectively identify and debug complex application issues.
VERSION CONTROL This is the practice of tracking and managing changes to software code. Version control systems like Git allow multiple developers to work on the same codebase without conflicts, maintain historical versions of code and manage updates and merging of code branches. It is crucial for collaborative and individual development workflows.	Can understand and use basic version control systems like Git. Can track changes in code and manage multiple versions of web applications.	Can effectively utilize version control systems to collaborate with team members and maintain a clear history of code changes. Can resolve conflicts and ensure code integrity.	Possesses deep expertise in version control systems and best practices. Can implement branching strategies, merge procedures, and code review processes to ensure efficient and effective code management.

INFORMATION TECHNOLOGY

FULL STACK DEVELOPER

SALARY RANGE	**Entry Level:** $60,000-$80,000	**Advanced Level:** $100,000-$150,000
TECHNOLOGIES	• HTML • CSS • Front-end frameworks • Programming languages • Back-end frameworks • Databases • APIs • Cloud platforms • Containerization technologies • Javascript/Typescript • SQL • React • Next.js • Vue.js • Remix • Svelte • Angular	• Node.js • Express • Nest • Feathers • Flask • Django • Ruby on Rails • Java • Kotlin • MySQL • PostgreSQL • MongoDB • Redis • AWS • Google Cloud • Vercel • Render
WORK EXPERIENCE	**Entry Level:** 1-2 years	
CREDENTIALS	**Required:** High School Diploma **Sometimes Required:** Associate or Bachelor degree	**Optional/Dependent on Specialty - Certifications:** AWS Certified Solutions Architect - Associate, Microsoft Azure Fundamentals, Google Associate Cloud Engineer, Certified Kubernetes Administrator (CKA), Docker Certified Associate (DCA), HashiCorp Certified Terraform Associate, DevOps Institute Certified Associate (DOIA), EXIN DevOps Foundation, ITIL Foundation for DevOps
OTHER JOB TITLES/ROLES	Back-End Developer, Front-End Developer, Full Stack Engineer, Full Stack Software Developer, JavaScript Developer, MERN Stack Developer, MEAN Stack Developer, React Developer, Software Developer, Web Developer, Web Applications Developer	

INFORMATION TECHNOLOGY

IOT DEVELOPER

JOB DESCRIPTION

An IoT Developer is a key player in designing, developing, and implementing innovative solutions within the Internet of Things (IoT) ecosystem, a role that blends software and hardware knowledge. Their responsibilities include programming IoT devices to collect, send, and receive data, and developing applications to integrate these devices with various systems and services. Proficient in networking, cloud computing platforms, and essential IoT languages like Python, Java, and C/C++, they analyze user needs and develop software solutions for effective data movement, often via APIs. Their tasks also involve designing or customizing software to optimize connectivity and data flow, and they may engage in database design within their application area, either independently or as part of a team. Collaborating closely with data scientists, engineers, and security experts, they ensure the creation of robust, efficient, and secure IoT solutions, contributing to the advancement of smart devices and systems across a range of applications from home automation to industrial IoT. For those inclined towards leadership, opportunities exist to mentor other developers, guiding them in the complex and evolving IoT landscape.

KEY FOUNDATIONAL COMPETENCIES

Adaptability, Analytical Thinking, Basic Computer Competencies, Communication, Creative Thinking, Critical Thinking, Customer Focus, Dependability, Detail Orientation, Humility, Initiative, Instruction/Teaching, Integrity, Interpersonal Competencies, Leadership, Lifelong Learning, Mathematics, Problem Solving/Decision Making, Professionalism, Reading, Scheduling/Coordinating, Science & Technology, Teamwork and Writing

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
EMBEDDED SYSTEMS PROGRAMMING Involves writing software for microcontrollers or microprocessors that are part of a larger system or device, focusing on resource constraints and real-time computing.	Can understand basic concepts of embedded systems programming, including microcontrollers, GPIO, and interrupts.	Can effectively program embedded systems using various programming languages, such as C and Assembly, to control hardware and implement device functionalities.	Possesses deep expertise in embedded systems programming, including advanced topics like real-time operating systems, hardware-software interfacing, and low-power optimization.
WIRELESS COMMUNICATION PROTOCOLS Standards and regulations that govern the communication between wireless devices, such as Wi-Fi, Bluetooth and Zigbee.	Can understand basic concepts of wireless communication protocols, such as Bluetooth, Wi-Fi, and Zigbee.	Can effectively implement and configure wireless communication protocols for IoT devices, ensuring reliable data transmission and reception.	Possesses deep expertise in wireless communication protocols, including advanced topics like network optimization, security protocols, and error correction techniques.
CLOUD COMPUTING Denotes the use of remote servers hosted on the internet to store, manage, and process data, as opposed to local servers or personal computers.	Can understand basic concepts of cloud computing, including cloud platforms, cloud services, and cloud deployment models.	Can effectively utilize cloud platforms, such as AWS, Azure, or GCP, to store, process, and manage IoT device data.	Possesses deep expertise in cloud computing, including advanced topics like cloud scalability, security, and cost optimization.
DATA ANALYTICS Process of examining datasets to draw conclusions about the information they contain, often using specialized systems and software	Can understand basic concepts of data analytics, including data collection, data preprocessing, and data visualization.	Can effectively analyze IoT device data using various data analytics techniques to extract meaningful insights and inform decision-making.	Possesses deep expertise in data analytics, including advanced topics like machine learning, predictive analytics, and big data processing.

INFORMATION TECHNOLOGY

IOT DEVELOPER

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
HARDWARE INTEGRATION Process of ensuring that various hardware components function together within a system, which may involve design and compatibility considerations.	Can understand basic concepts of hardware integration, including device interfacing, sensor integration, and data acquisition.	Can effectively integrate hardware components with IoT devices, ensuring seamless communication and data exchange.	Possesses deep expertise in hardware integration, including advanced topics like hardware debugging, power management, and hardware abstraction layers.
SOFTWARE DESIGN AND ARCHITECTURE Involves the high-level structuring of software systems, considering elements like software components, their interfaces, and interactions.	Can understand basic concepts of software design and architecture, including object-oriented programming, modular design, and design patterns.	Can effectively design and implement software for IoT devices, following best practices for code quality, maintainability, and scalability.	Possesses deep expertise in software design and architecture, including advanced topics like distributed systems, microservices architecture, and cloud-native development.
TESTING AND DEBUGGING Involves the systematic identification and resolution of defects or issues in software, ensuring that the software operates as intended.	Can understand basic concepts of testing and debugging, including unit testing, integration testing, and system testing.	Can effectively apply testing methodologies to ensure the functionality, performance, and security of IoT devices and software.	Possesses deep expertise in testing and debugging, including advanced topics like automated testing, performance testing, and security testing.
VERSION CONTROL System that records changes to a file or set of files over time so that specific versions can be recalled later, which is crucial in collaborative environments.	Can understand basic concepts of version control, including Git and Mercurial.	Can effectively utilize version control systems to manage code changes, collaborate with team members, and maintain a clear history of code development.	Possesses deep expertise in version control, including advanced topics like branching strategies, merge procedures, and code review processes.

INFORMATION TECHNOLOGY

IOT DEVELOPER

SALARY RANGE	**Entry Level:** $65,000-$85,000	**Advanced Level:** $90,000-$140,000
TECHNOLOGIES	• Programming Languages: Python, JavaScript/Node.js, C/C++, Java, Go • Cloud Computing Platforms: AWS IoT Core, Microsoft Azure IoT Hub, Google Cloud IoT • IoT Device Management and Data Analytics Tools: IBM Watson IoT • Wireless Communication Standards: Wi-Fi, Bluetooth, Zigbee • LPWAN Technologies: LoRaWAN, NB-IoT, Sigfox • Data Storage and Management Tools: SQL and NoSQL databases • Big Data Processing Tools: Apache Hadoop, Apache Spark	• Machine Learning Frameworks: TensorFlow, PyTorch • Encryption and Secure Protocols: TLS/SSL • Authentication and Authorization Mechanisms: JWT, OAuth • Containerization and Virtualization Technologies: Docker, Kubernetes • CI/CD Tools: Jenkins, GitLab CI • Git • Distributed Systems (logging, tracing) • Terraform • DevOps • Unit, Integration, End-to-End Testing • Test-Driven Development • Open IIoT Protocols: Pub/Sub, MQTT
WORK EXPERIENCE	**Entry Level:** 0-2 years	
CREDENTIALS	**Required:** High School Diploma **Sometimes Required:** Associate or Bachelor degree	**Optional/Dependent on Specialty - Certifications:** Cisco Certified Network Associate (CCNA) - IoT, CompTIA IT Fundamentals (ITF+) or A+, Microsoft Certified: Azure IoT Developer Specialty, AWS Certified IoT Specialty, Certified Internet of Things Practitioner (CIoTP), IoT Security Certification by ISC, Google Cloud IoT Core Certification
OTHER JOB TITLES/ROLES	Automation Engineer, Cloud Integration Specialist, Connectivity Engineer, Data Scientist (IoT-focused), Embedded Systems Developer, Firmware Engineer, Hardware Design Engineer, IoT Architect, IoT Consultant, IoT Product Manager, IoT Solutions Architect, IoT Systems Engineer, Machine Learning Engineer (IoT-focused), Network Security Specialist (IoT-focused), and Wireless Communications Engineer, Telemetriy Engineer, Controls Engineer, Implementation Engineer	

INFORMATION TECHNOLOGY

MANUFACTURING AND ROBOTICS TECHNICIAN

JOB DESCRIPTION	Manufacturing and Robotics Technicians install, configure, operate, and troubleshoot issues related to various manufacturing robots and related equipment. This role demands regular maintenance, system upgrades and prompt attention to malfunctions or breakdowns to minimize operational downtime. Technicians program and calibrate robots to meet specific production requirements and collaborate with engineers and other technicians to optimize robotic processes and to integrate new technologies. Requirements include technical expertise in problem-solving abilities, and adaptability to fast-paced, evolving environments. Key aspects include adherence to safety regulations and active participation in process improvement initiatives.
KEY FOUNDATIONAL COMPETENCIES	Adaptability, Basic Computer Competencies, Communication, Creative Thinking, Critical & Analytical Thinking, Customer Focus, Dependability, Detail Orientation, Humility, Initiative, Instruction/Teaching, Integrity, Interpersonal Competencies, Leadership, Lifelong Learning, Mathematics, Problem Solving/ Decision Making, Professionalism, Reading, Scheduling/Coordinating, Science & Technology, Teamwork and Writing.

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
MECHANICAL TROUBLESHOOTING This involves diagnosing and fixing issues in mechanical systems and machinery. It requires knowledge of mechanical components, understanding of how systems operate, and the ability to pinpoint and resolve issues that affect mechanical functionality.	Can identify basic mechanical problems and follow simple troubleshooting procedures. Strong Documentation Skills	Can effectively troubleshoot mechanical problems, analyze symptoms, and identify root causes.	Possesses in-depth mechanical troubleshooting expertise, using advanced diagnostic techniques and specialized tools to resolve complex mechanical issues.
ELECTRICAL AND ELECTRONIC TROUBLESHOOTING Identifying and solving problems within electrical circuits, components, and systems. Solid understanding of electrical principles, proficiency with diagnostic tools like multimeters, and the capability to repair or replace faulty electronic parts.	Can understand basic electrical and electronic concepts and identify simple electrical faults.	Can effectively troubleshoot electrical and electronic systems, using multimeters, oscilloscopes, and other diagnostic tools.	Possesses in-depth electrical and electronic troubleshooting expertise, analyzing complex circuits, diagnosing component failures, and resolving intricate electrical issues.
ROBOTICS PROGRAMMING This skill set is centered on writing and adjusting the software that controls robots. It encompasses coding in various robotics programming languages, configuring robotic movements and tasks, and optimizing performance to meet specific operational requirements.	Can understand basic robotics programming concepts and write simple robotic programs.	Can effectively program robotic systems using various programming languages, such as Python, C++, and RobotC. Familiar with PLC Programming (Allen Bradley, Siemens, Beckhoff)	Possesses in-depth robotics programming expertise, designing, and implementing complex robotic control systems, optimizing program performance, and integrating advanced algorithms.

INFORMATION TECHNOLOGY

MANUFACTURING AND ROBOTICS TECHNICIAN

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
PREVENTIVE MAINTENANCE Regular inspection and maintenance of equipment to prevent future breakdowns and failures. It includes tasks such as cleaning, lubricating, adjusting and parts replacement to ensure that machinery and systems are in optimal condition and to extend their service life.	Can perform basic preventive maintenance tasks, such as lubrication, cleaning, and visual inspections.	Can effectively develop and implement preventive maintenance schedules, perform routine inspections, and identify potential problems before they occur. Familiarity with Industrial Robotics (Fanuc, Yamaha, MIR, Kuka)	Possesses in-depth preventive maintenance expertise, creating comprehensive maintenance plans, utilizing predictive maintenance techniques, and extending equipment lifespan.

INFORMATION TECHNOLOGY

MANUFACTURING AND ROBOTICS TECHNICIAN

SALARY RANGE	**Entry Level:** $70,000-$90,000	**Advanced Level:** $90,000-$115,000
TECHNOLOGIES	• Industrial Robots • PLCs (Programmable Logic Controllers) • CAD/CAM Software • CNC Machines • Sensors and Actuators • HMI (Human-Machine Interface) • SCADA Systems (Supervisory Control and Data Acquisition) • Pneumatics and Hydraulics • Robotics Programming Languages • IoT (Internet of Things) Platforms • 3D Printing/Additive Manufacturing • Electrical and Electronic Systems • Vision Systems • Machine Learning and AI • Safety Systems • Microsoft Excel • Microsoft Word • Microsoft Powerpoint	
WORK EXPERIENCE	**Entry Level:** 0-2 years	
CREDENTIALS	**Required:** High School Diploma **Sometimes Required:** Relevant Coursework	**Optional/Dependent on Specialty - Certifications:** Certified Production Technician (CPT):, Certified Automation Professional (CAP), Certified Robotics Technician (CRT), OSHA Safety Certification, Lean Six Sigma Yellow Belt, Associate Certified Electronics Technician (CETa), Electrical certifications
OTHER JOB TITLES/ROLES	Automation Engineer, Control Systems Technician, Electronics Technician, Fabrication Specialist, Industrial Maintenance Technician, Machine Operator, Mechatronics Technician, PLC Programmer, Process Technician, Production Support Engineer, Quality Assurance Technician, Robotics Engineer, Robotics Operator, and Systems Integrator are all job titles and roles that share similarities with Manufacturing and Robotics Technician	

INFORMATION TECHNOLOGY

DATABASE ADMINISTRATOR

JOB DESCRIPTION	Database Administrators (DBAs) manage, maintain, and support databases to ensure optimal performance, security, and reliability. DBAs establish database systems, ensuring they are accessible to appropriate users and secure from unauthorized access. They organize database structure, plan capacity needs, implement upgrades and manage parameters to ensure seamless database performance. DBA monitor system health and performance, analyze and tune database performance, perform scheduled maintenance and support release deployment activities, execute backups and lead recovery efforts when necessary. They often collaborate with Information Technology (IT) project managers, database programmers and multimedia programmers. Key to the role is understanding organizations' specific data needs and creating tailored database solutions, keeping abreast of the latest technology and security trends, and ensuring databases are up to standard and can withstand modern cyber threats and demands.
KEY FOUNDATIONAL COMPETENCIES	Adaptability, Basic Computer Competencies, Communication, Creative Thinking, Critical & Analytical Thinking, Customer Focus, Dependability, Detail Orientation, Humility, Initiative, Instruction/Teaching, Integrity, Interpersonal Competencies, Leadership, Lifelong Learning, Mathematics, Problem Solving/ Decision Making, Professionalism, Reading, Scheduling/Coordinating, Science & Technology, Teamwork and Writing.

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
DATABASE DESIGN AND MODELING This involves creating the detailed data models that define the database structure, determining how data is stored, organized, and accessed. It often includes establishing relationships among data elements and designing schemata according to rules and constraints to ensure data integrity and efficiency.	Can understand basic database concepts, such as entities, relationships, and normalization.	Can effectively design and implement simple database structures using relational or NoSQL databases.	Possesses in-depth database design expertise, creating complex data models that meet the organization's specific data storage and retrieval requirements.
DATA MANAGEMENT AND QUERYING Skills required to handle and manipulate data within the database. It includes the ability to write complex queries to retrieve, insert, update, and delete data, ensuring data is accurate and readily accessible when needed.	Can perform basic data manipulation tasks, such as inserting, updating, and deleting data using SQL queries.	Can effectively manage and query data from various database systems, utilizing advanced SQL techniques and data manipulation statements.	Possesses in-depth data management expertise, optimizing data retrieval, implementing data warehousing solutions, and handling complex data transformations.
DATABASE PERFORMANCE TUNING This involves optimizing and refining the database to improve its performance. Techniques may include indexing, query optimization, configuring database settings and fine-tuning the operating environment to ensure quick and efficient data retrieval and transaction processing.	Can identify basic performance issues and apply simple optimization techniques.	Can effectively analyze database performance metrics, identify performance bottlenecks, and implement optimization strategies to improve database efficiency.	Possesses in-depth performance tuning expertise, utilizing advanced analysis tools, optimizing query performance, and addressing scalability challenges.

INFORMATION TECHNOLOGY

DATABASE ADMINISTRATOR

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
DATABASE SECURITY AND ACCESS CONTROL Protecting the integrity, confidentiality and availability of the database is crucial. This includes implementing security measures like access controls, authentication, encryption, and auditing to prevent unauthorized access and ensure data protection.	Can understand basic database security concepts and implement simple security measures.	Can effectively implement and enforce security protocols, including user authentication, data encryption, and access control mechanisms.	Possesses in-depth database security expertise, conducting risk assessments, implementing security best practices, and safeguarding against cyberattacks.
TROUBLESHOOTING AND PROBLEM-SOLVING Involves identifying and resolving issues that arise within the database environment. It requires a systematic approach to diagnose problems and the ability to implement solutions to restore functionality and service levels.	Can identify basic database problems and follow troubleshooting procedures.	Can effectively troubleshoot complex database issues, analyzing error logs, diagnosing root causes, and implementing solutions to restore database functionality.	Possesses in-depth troubleshooting expertise, utilizing advanced diagnostic tools, resolving complex performance issues, and handling critical data recovery scenarios.

INFORMATION TECHNOLOGY

DATABASE ADMINISTRATOR

SALARY RANGE	**Entry Level:** $55,000-$75,000	**Advanced Level:** $95,000-$120,000
TECHNOLOGIES	• Relational Database Management Systems (RDBMS) • NoSQL Databases • SQL and Database-Specific Query Languages • Cloud Database Services • Database Automation Tools • Version Control Systems • Database Monitoring and Performance Tools • Backup and Recovery Tools • Data Replication and Synchronization Tools • ETL (Extract, Transform, Load) Tools • Scripting Languages • Containerization and Virtualization Technologies • Security Tools • Data Modeling Tools	
WORK EXPERIENCE	**Entry Level:** 0-2 years	
CREDENTIALS	**Required:** High School Diploma **Sometimes Required:** Associate or Bachelor degree	**Optional/Dependent on Specialty - Certifications:** CompTIA A+ Certification, CompTIA Data+ Certification, Microsoft Certified: Azure Fundamentals, Oracle Certified Associate (OCA) Database 12c, Microsoft Certified: SQL Server 2016/2019 Associate, IBM Certified Database Associate - DB2, CompTIA IT Fundamentals (ITF+), Microsoft Certified: Azure Database Administrator Associate, MongoDB Certified DBA Associate, AWS Certified Database - Specialty
OTHER JOB TITLES/ROLES	Business Intelligence Developer, Data Analyst, Data Architect, Data Engineer, Data Manager, Data Warehouse Specialist, Database Coordinator, Database Developer, Database Manager, Information Systems Manager, SQL Developer, Systems Administrator, and Systems Analyst	

INFORMATION TECHNOLOGY

UI/UX DESIGNER

JOB DESCRIPTION	A UI/UX Designer focuses on user interface (UI) and user experience (UX) design and creates digital interfaces that are intuitive and engaging. This role requires a deep understanding of user behaviors, needs and motivations and derives that knowledge through research and feedback. Responsibilities include translating this understanding into practical design elements such as sitemaps, user flows, customer journey maps, wireframes, mockups and prototypes. UI/UX Designers create products' overall functionality and continuously iterate to enhance UX and align user needs and client objectives. UI/UX Designers must effectively collaborate with product teams, engineers, and stakeholders to identify design challenges and develop solutions. Also key is the ability to make strategic decisions regarding design and user experience for core and new functionalities, superior design and UI skills, and the ability to translate high-level requirements into interactive design and user interfaces throughout the product development process.
KEY FOUNDATIONAL COMPETENCIES	Adaptability, Basic Computer Competencies, Communication, Critical & Analytical Thinking, Creative Thinking, Customer Focus, Dependability, Detail Orientation, Humility, Initiative, Instruction/Teaching, Integrity, Interpersonal Competencies, Leadership, Lifelong Learning, Mathematics, Problem Solving/Decision Making, Professionalism, Reading, Scheduling/Coordinating, Science & Technology, Teamwork and Writing

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
USER RESEARCH AND ANALYSIS To effectively and accurately develop products, UI/UX Designers must understand organizational goals, target audiences, user needs, behaviors and motivations. This insight is derived by conducting interviews, surveys, usability tests and other means.	Can identify basic user needs and preferences through simple surveys and interviews.	Can effectively conduct user research using various methods, including surveys, interviews, user testing, and data analysis.	Possesses in-depth user research expertise, utilizing advanced research techniques, analyzing user behavior patterns, and translating findings into actionable design insights.
INFORMATION ARCHITECTURE Structuring and organizing of information within a digital product to help users find information and complete tasks efficiently. This work involves creating hierarchies, categorizations and navigation schemas that are logical and intuitive.	Can understand basic information architecture concepts and organize information in a simple manner.	Can effectively design and implement information architecture, structuring content in a logical and user-friendly way.	Possesses in-depth information architecture expertise, creating intuitive and scalable information structures that enhance user navigation and content discovery.
WIREFRAMING AND PROTOTYPING This is the processes of creating simplified and low-fidelity representations (wireframes) of a product to outline its layout and functionality. Prototyping is an extension of this, often creating interactive models of the wireframes to simulate user interactions.	Can create basic wireframes to visualize user flows and interactions.	Can effectively create wireframes and prototypes using industry-standard tools, simulating the user experience, and facilitating design feedback.	Possesses in-depth wireframing and prototyping expertise, crafting high-fidelity prototypes that accurately represent the final product and enable iterative design refinement.

INFORMATION TECHNOLOGY

UI/UX DESIGNER

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
VISUAL COMMUNICATION AND UI DESIGN Visual aspect of the user interface, including the selection of color schemes, typography, iconography, and the creation of a coherent visual language that aligns with the brand and enhances the user's experience.	Can understand basic visual design principles and apply them to create simple interfaces.	Can effectively apply visual design principles to create engaging and aesthetically pleasing interfaces.	Possesses in-depth visual design expertise, utilizing design principles, color theory, typography, and layout strategies to create visually appealing and user-friendly interfaces.
USER TESTING AND ITERATION This involves conducting tests with actual users to evaluate the usability and effectiveness of a product. Based on the feedback, the design is iterated and refined to solve any usability issues and improve the overall experience.	Can conduct basic usability testing and provide feedback on simple design elements.	Can effectively conduct usability testing sessions, identify usability issues, and analyze user feedback to inform design iterations.	Possesses in-depth user testing expertise, designing, and implementing user testing plans, analyzing user behavior patterns, and using insights to refine the design for optimal usability.

INFORMATION TECHNOLOGY

UI/UX DESIGNER

SALARY RANGE	**Entry Level:** $50,000-$65,000	**Advanced Level:** $80,000-$130,000
TECHNOLOGIES	• Programming languages: Python, JavaScript, HTML/CSS/SCSS, TypeScript, Go, C/C++, Rust • UI frameworks and libraries: React, Angular, Vue.js, Svelte, Flutter, React Native, Electron • Design tools: Figma, Sketch, Adobe XD, Zeplin, Abstract • Prototyping tools: Framer, InVision, ProtoPie, Figma Prototyping • Version control systems: Git, GitHub, Mercurial • Build tools: Webpack, Parcel, Rollup, Gulp, Grunt • Testing frameworks: Jest, Cypress, Selenium, Mocha • Deployment tools: Netlify, Vercel, AWS Amplify, Firebase • Monitoring tools: New Relic, Datadog, Sentry, Prometheus • Cloud computing platforms: AWS, Azure, GCP • Figma • Sketch • Usertesting.com	
WORK EXPERIENCE	**Entry Level:** 0-3 years	
CREDENTIALS	**Required:** High School Diploma **Sometimes Required:** Associate or Bachelor degree	**Optional/Dependent on Specialty - Certifications:** Adobe Certified Expert (ACE), Google UX Design Professional Certificate, Nielsen Norman Group (NN/g) UX Certification, Interaction Design Foundation (IDF) Courses, Certified Usability Analyst (CUA), Certified User Experience Analyst (CXA), General Assembly (GA) UX Design Immersive, UX Design Institute's Professional Diploma in UX Design, Sketch Certification
OTHER JOB TITLES/ROLES	Creative Director, Digital Designer, Experience Designer, Information Architect, Interaction Designer, Interface Designer, Product Designer, UI Developer, UI Engineer, User Experience Researcher, User Interface Coordinator, Visual Designer, Web Designer, and Wireframe Specialist	

INFORMATION TECHNOLOGY

BIOINFORMATICS SCIENTIST

JOB DESCRIPTION

Bioinformatics Scientists merge biology, computer science and Information Technology (IT) to analyze and interpret biological data to process genomic and other biological information. This role works closely with molecular biologists and geneticists to understand complex data sets, such as those generated by high-throughput sequencing. Bioinformatics Scientists design and apply algorithms, computational models, and statistical techniques to solve problems in drug discovery, personalized medicine, and biology. Responsibilities include developing databases to store biological information, such as gene expression databases, and conducting data analysis to identify patterns, variants, and new biological insights. Bioinformatics Scientists communicate findings through detailed reports and visualizations and collaborate with research teams to advance scientific knowledge, typically in academic, biotechnological, or pharmaceutical sectors. This work often leads to actionable strategies for treating diseases or understanding evolutionary biology and is often at the forefront of computational biology, turning biological data into critical discoveries and applications.

KEY FOUNDATIONAL COMPETENCIES

Adaptability, Computer Proficiency, Communication skills, Critical Thinking, Customer Focus, Dependability, Detail Orientation, Humility, Proactive Initiative, Instructional Skills, Integrity, Interpersonal Collaboration, Leadership, Continuous Learning, Mathematical Acumen, Problem Solving, Professional Integrity, Scientific Literacy, Team Collaboration and Writing Skills.

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
BIOLOGICAL COMPUTATIONAL THEORY AND METHODS Understanding and applying computational techniques and theories to biological data, such as algorithms for sequence alignment, phylogenetic analysis, and modeling of biological systems.	Can understand basic concepts of computational biology, such as algorithms, data structures, and programming languages. Limited grasp of computational techniques in biological data	Can effectively apply computational methods to biological data, including sequence analysis, protein structure prediction, and gene expression analysis. Developing understanding, applying algorithms for basic tasks	Possesses in-depth knowledge of biological computational theory and methods, utilizing advanced algorithms and techniques to solve complex biological problems and make novel discoveries. Advanced application to intricate biological datasets
GENOMICS AND GENETIC ANALYSIS Skills in analyzing genomic data to understand genetic variations, heredity, and mutations, which can have implications in fields like personalized medicine and genetic disorder research.	Can understand basic concepts of genomics and genetics, including DNA structure, gene function, and inheritance patterns. Limited familiarity with proteomics principles	Can effectively analyze genomic data to identify genetic variants, predict gene function, and study disease-causing mutations. Competent in analyzing genetic data with guidance. Basic skills in studying protein structure	Possesses in-depth expertise in genomics and genetic analysis, utilizing advanced techniques to conduct genome-wide association studies, analyze population genetics, and develop personalized medicine approaches. In-depth skills in genomic analysis, interpreting variations, and mutations
PROTEOMICS AND PROTEIN STRUCTURE ANALYSIS Focuses on the study of proteomes, including the structure, function, and interactions of proteins, utilizing methods like mass spectrometry and X-ray crystallography.	Can understand basic concepts of proteomics and protein structure, including protein identification, protein-protein interactions, and protein function prediction.	Can effectively analyze proteomics data to identify proteins, characterize protein modifications, and study protein-protein interactions.	Possesses in-depth expertise in proteomics and protein structure analysis, utilizing advanced techniques to identify novel proteins, characterize protein complexes, and develop structure-based drug discovery strategies. Advanced expertise in proteome analysis using diverse methods

INFORMATION TECHNOLOGY

BIOINFORMATICS SCIENTIST

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
DATA MANAGEMENT AND ANALYSIS Data management is critical for handling large datasets typical in bioinformatics, which includes database design, data mining and the application of statistical methods and machine learning to analyze and interpret data.	Can handle basic data management tasks, such as data organization, data cleaning, and data analysis using spreadsheets and statistical software. Limited knowledge of data management in bioinformatics	Can effectively manage and analyze large biological datasets using relational databases, data warehousing tools, and statistical analysis packages. Basic skills in database design and data mining	Possesses in-depth data management and analysis expertise, utilizing advanced data mining techniques, machine learning algorithms, and cloud-based computing platforms to extract meaningful insights from complex biological data.
"SCIENTIFIC COMMUNICATION AND PRESENTATION This involves the ability to effectively communicate complex scientific information to a variety of audiences, in written and oral forms, such as research papers and reports and presentations.	Can effectively communicate scientific findings in written and oral formats, using clear and concise language.	Can effectively present scientific research to both technical and non-technical audiences, using engaging presentations and clear explanations.	Possesses in-depth scientific communication and presentation skills, crafting compelling scientific narratives, designing impactful presentations, and effectively communicating complex research findings to a wide range of audiences. Advanced application of statistical methods and machine learning for data analysis

INFORMATION TECHNOLOGY

BIOINFORMATICS SCIENTIST

SALARY RANGE	**Entry Level:** $65,000-$85,000	**Advanced Level:** $105,000-$130,000
TECHNOLOGIES	• Programming languages: Python, R, MATLAB, Julia • Statistical software: SAS, SPSS, Stata • Machine learning libraries: TensorFlow, PyTorch, scikit-learn • Data visualization libraries: ggplot2, Tableau, Power BI • Cloud computing platforms: AWS, Azure, GCP • Big data technologies: Hadoop, Spark, Hive • Bioinformatics tools: BLAST, Clustal Omega, SAMtools, PEARL • Genomics tools: GATK, VCFtools, BCFtools • Proteomics tools: MaxQuant, Mascot, Proteome Discoverer • Transcriptomics tools: TopHat, HISAT2, StringTie	
WORK EXPERIENCE	**Entry Level:** 0-3 years	
CREDENTIALS	**Required:** Associate or Bachelor degree **Sometimes Required:** Masters degree	**Optional/Dependent on Specialty - Certifications:** Bioinformatics Certification from Coursera, Certified Bioinformatics Professional from Biotecnika, Bioconductor Certification, R and Python Programming Certifications, Genomic Data Science Certification from Johns Hopkins University (via Coursera), Machine Learning and Data Science Certifications, Linux and Unix Certification, Database Management Certifications
OTHER JOB TITLES/ROLES	Bioinformatics Analyst, Bioinformatics Developer, Bioinformatics Engineer, Bioinformatics Specialist, Computational Biologist, Genomic Data Analyst, Informatics Consultant, Molecular Modelling Specialist, Proteomics Scientist, Research Scientist (Bioinformatics), Scientific Curator, Sequence Analyst, Systems Biologist.	

INFORMATION TECHNOLOGY SYSTEM ARCHITECT

JOB DESCRIPTION	Systems Architects create overarching architectures that align with current and future Information Technology (IT) and business needs. This role requires a deep understanding of technical and business aspects that guide the decision-making process in system design and the ability to coordinate with multiple teams for project evaluation. Systems Architects ensure seamless integration of new systems with existing infrastructure, adhering to technology standards and architectural frameworks. Acting as a bridge between high-level business goals and IT project specifics, System Architects anticipate and address system design issues while balancing constraints like cost and existing infrastructure. With robust problem-solving and critical-thinking skills, the Systems Architect provides technical leadership, mentors teams, and establishes an architectural roadmap for development. They also keep up-to-date with new technologies, ensuring the system's evolution to meet efficiency and business needs.
KEY FOUNDATIONAL COMPETENCIES	Adaptability, Basic Computer Competencies, Communication, Critical & Analytical Thinking, Customer Focus, Dependability, Detail Orientation, Humility, Initiative, Instruction/Teaching, Integrity, Interpersonal Competencies, Leadership, Lifelong Learning, Mathematics, Problem Solving/Decision Making, Professionalism, Reading, Scheduling/Coordinating, Science & Technology, Teamwork and Writing.

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
SYSTEMS ARCHITECTURE AND DESIGN Involves the conceptualization and development of the fundamental structure of a system, including its components, their relationships to each other and to the environment, as well as the principles guiding its design and evolution. It encompasses creating high-level designs that integrate hardware, software, data, and process elements to fulfill specific business or technical requirements.	Can understand basic concepts of systems architecture and apply them to simple systems.	Can effectively design and implement complex IT systems, considering scalability, reliability, security, and performance.	Possesses in-depth expertise in systems architecture and design, utilizing advanced techniques to create innovative and resilient solutions that meet business objectives.
TECHNICAL REQUIREMENTS ANALYSIS AND SPECIFICATION This refers to the process of determining user expectations for a new or modified product. This competency includes the ability to identify, articulate, and document the needs and constraints of various stakeholders, forming the basis upon which systems are built or improved.	Can gather and analyze basic business requirements and translate them into simple technical specifications.	Can effectively gather, analyze, and prioritize complex business requirements, transforming them into comprehensive and actionable technical specifications.	Possesses in-depth expertise in technical requirements analysis and specification, eliciting nuanced requirements from stakeholders, identifying potential risks and dependencies, and crafting detailed specifications that align with business goals.

INFORMATION TECHNOLOGY SYSTEM ARCHITECT

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
SYSTEM MODELING AND SIMULATION This involves creating abstract models of systems using simulation software to analyze their behavior and performance under various conditions. It enables architects to predict the effects of changes, optimize system design, and validate that systems meet specified requirements before full-scale production or implementation.	Can apply basic system modeling techniques to visualize and understand simple systems.	Can effectively utilize system modeling and simulation tools to create accurate representations of complex IT systems, enabling performance evaluation, risk assessment, and design optimization.	Possesses in-depth expertise in system modeling and simulation, leveraging advanced techniques to model intricate system interactions, predict behavior under various scenarios, and inform design decisions for optimal system performance and reliability.
CLOUD COMPUTING AND DEVOPS METHODOLOGIES Understanding and applying cloud infrastructure and services (like IaaS, PaaS, SaaS) to provide scalable and on-demand computing resources. It also includes DevOps practices, which combine software development (Dev) and IT operations (Ops) to shorten the systems development life cycle and provide continuous delivery with high software quality.	Can understand basic cloud computing concepts and apply them to simple IT deployments.	Can effectively implement and manage cloud-based IT systems, utilizing DevOps methodologies to achieve continuous delivery, integration, and automation.	Possesses in-depth expertise in cloud computing and DevOps methodologies, designing and deploying cloud-native architectures, automating infrastructure provisioning and configuration, and enabling rapid development and deployment of software applications.
NETWORKING AND SECURITY PRINCIPLES This includes the mastery of designing and managing networks, ensuring reliable connectivity, efficient data transmission and scalability. It also encompasses the principles of securing networks and systems from unauthorized access or attacks, understanding of security protocols and the application of best practices in cybersecurity.	Can understand basic networking and security concepts and apply them to simple IT systems.	Can effectively design, implement, and maintain secure and resilient IT networks, considering data confidentiality, integrity, and availability.	Possesses in-depth expertise in networking and security principles, designing robust network architectures, implementing advanced security protocols, and mitigating cyberthreats to safeguard sensitive data and ensure system integrity.

INFORMATION TECHNOLOGY

SYSTEM ARCHITECT

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
SYSTEM ANALYSIS AND TROUBLESHOOTING Deep understanding of complex systems, their components and interactions. Proficient in analyzing system behavior, identifying root causes of issues, and implementing effective troubleshooting strategies. Ability to diagnose and resolve performance bottlenecks, optimize system operation, and ensure system resilience.	Assists with simple tasks, follows procedures, diagnoses basic issues.	Analyzes and troubleshoots independently, identifies root causes, implements solutions, optimizes performance.	Diagnoses and resolves complex issues, develops innovative solutions, anticipates problems, ensures system resilience.
PROJECT MANAGEMENT AND LEADERSHIP Demonstrated skills in planning, executing, and controlling projects from conception to completion. Strong leadership capabilities, including effective communication, delegation, and team motivation. Ability to manage resources, budgets, and risks effectively, meet deadlines and deliver projects within scope and on budget.	Limited involvement, requires guidance, contributes to specific tasks.	Leads small projects, manages timelines, resources, budgets effectively.	Leads large and complex projects independently, proactive planning, execution, risk mitigation, excellent communication and leadership.

INFORMATION TECHNOLOGY

SYSTEM ARCHITECT

SALARY RANGE	**Entry Level:** $73,000-$104,000	**Advanced Level:** $125,000-$170,000
TECHNOLOGIES	• Programming languages: Python, Java, JavaScript, C++, C# • Cloud computing platforms: AWS, Azure, GCP • Data processing frameworks: Hadoop, Spark, Flink • Machine learning frameworks: TensorFlow, PyTorch, scikit-learn • Database technologies: SQL, NoSQL, relational databases, graph databases • Containerization and virtualization technologies: Docker, Kubernetes, OpenStack • Networking technologies: TCP/IP, HTTP, DNS, VPN • Security technologies: firewalls, intrusion detection systems, encryption • DevOps tools: Jenkins, Ansible, Terraform • Communication and collaboration tools: Slack, Microsoft Teams, GitHub	
WORK EXPERIENCE	**Entry Level:** 2-3 years	
CREDENTIALS	**Required:** Associates or Bachelors degree **Sometimes Required:** Additional Relevant Coursework	**Optional/Dependent on Specialty - Certifications:** Certified System Architect (CSA) by Pega, Certified Enterprise Architect (CEA), Certified Information Systems Security Professional (CISSP), Certified Business Analysis Professional (CBAP), Certified Solutions Architect – Associate (CSAA) by Amazon Web Services (AWS), CompTIA Cloud+ Certification, AWS Certified Solutions Architect, Azure Solutions Architect Expert, Google Professional Cloud Architect, Certified Information Systems Security Professional (CISSP), Project Management Professional (PMP)
OTHER JOB TITLES/ROLES	Application Architect, Chief Architect, Data Architect, Enterprise Architect, Hardware Architect, Infrastructure Architect, Integration Architect, Network Architect, Security Architect, Software Architect, Solutions Architect, Technical Architect, Technology Architect	

INFORMATION TECHNOLOGY

NETWORK ENGINEER

JOB DESCRIPTION

Network Engineers design, implement and maintain organizations' network infrastructures. The role requires a deep understanding of network hardware and software, as well as the ability to troubleshoot and solve complex network issues. Network Engineers ensure the smooth operation of communication networks to provide maximum performance and availability for users, such as staff, clients, customers, and suppliers. They often work with a team to deploy and optimize network systems, including local area networks (LANs), wide area networks (WANs), and intranets. Tasks include analyzing network data, performing routine maintenance, upgrading network infrastructure, and ensuring security against threats, collaboration with other IT staff and continuous learning to stay abreast of new technologies.

KEY FOUNDATIONAL COMPETENCIES

Adaptability, Basic Computer Competencies, Communication, Critical & Analytical Thinking, Customer Focus, Dependability, Detail Orientation, Humility, Initiative, Instruction/Teaching, Integrity, Interpersonal Competencies, Leadership, Lifelong Learning, Mathematics, Problem Solving/Decision Making, Professionalism, Reading, Scheduling/Coordinating, Science & Technology, Teamwork and Writing.

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
NETWORK DESIGN AND ARCHITECTURE Involves the planning and design of network infrastructure to ensure efficient and effective communication, data exchange and overall network management. This includes the selection of hardware and software, as well as the layout of cables and network devices.	Understands basic network design principles and can apply them to simple networks.	Can effectively design and implement complex networks, considering factors such as scalability, reliability, security, and performance.	Possesses in-depth expertise in network design and architecture, utilizing advanced techniques to create resilient and scalable networks that meet business objectives.
ROUTING AND SWITCHING TECHNOLOGIES Pertains to the technologies and protocols used to manage the flow of data across a network. This includes the ability to configure routers and switches, understand IP addressing and using routing protocols to find the best path for data transfer.	Can understand basic routing and switching concepts and apply them to simple networks.	Can effectively configure and manage routing and switching devices, implementing protocols such as OSPF, BGP, and VLANs.	Possesses in-depth expertise in routing and switching technologies, designing, and implementing complex network topologies, optimizing routing paths, and troubleshooting routing and switching issues.
NETWORK SECURITY Focuses on protecting the network and its data from unauthorized access, attacksattacks, and other security threats by implementing firewalls, intrusion detection systems, encryption, access controls and other means.	Can understand basic network security principles and apply them to simple networks.	Can effectively implement network security measures, such as firewalls, access control lists, and intrusion detection systems.	Possesses in-depth expertise in network security, designing and implementing comprehensive security solutions, mitigating cyberthreats, and conducting security audits.

INFORMATION TECHNOLOGY

NETWORK ENGINEER

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
NETWORK PERFORMANCE OPTIMIZATION Involves monitoring, testing and tuning network systems to improve performance. This may include optimizing bandwidth, reducing latency, and ensuring reliable packet delivery.	Can understand basic network performance metrics and apply basic troubleshooting techniques.	Can effectively monitor and analyze network performance data, identifying bottlenecks and implementing optimization strategies.	Possesses in-depth expertise in network performance optimization, utilizing advanced tools and techniques to identify and resolve performance issues, ensuring optimal network throughput and latency.
NETWORK TROUBLESHOOTING AND PROBLEM-SOLVING Deals with identifying and resolving network issues. This requires a systematic approach to diagnose problems and find solutions, often under time constraints.	Can apply basic troubleshooting techniques to identify and resolve simple network problems.	Can effectively troubleshoot complex network problems, using diagnostic tools and systematic approaches to identify and resolve network issues.	Possesses in-depth expertise in network troubleshooting and problem-solving, utilizing advanced diagnostic techniques, analyzing complex network behavior, and implementing effective solutions to restore network functionality.
NETWORK DOCUMENTATION Process of creating detailed records related to the network's design, setup, and configuration changes. This documentation is vital for maintenance, troubleshooting and compliance with standards and policies.	Can document network configurations and procedures at a basic level.	Can effectively document complex network configurations, procedures, and best practices, ensuring comprehensive and up-to-date documentation.	Possesses in-depth expertise in network documentation, creating clear, concise, and comprehensive documentation that facilitates network maintenance, troubleshooting, and knowledge transfer.
TECHNICAL COMMUNICATION Ability to effectively communicate complex technical information in a clear and understandable manner to various audiences, including team members, management, and non-technical stakeholders.	Can effectively communicate technical information to peers and non-technical stakeholders at a basic level.	Can effectively communicate complex technical concepts and information to both technical and non-technical audiences, using clear, concise, and understandable language.	Possesses in-depth expertise in technical communication, tailoring communication to different audiences, using effective presentation and documentation skills to convey technical information clearly and persuasively.

INFORMATION TECHNOLOGY

NETWORK ENGINEER

SALARY RANGE	**Entry Level:** $60,000-$75,000	**Advanced Level:** $95,000-$120,000
TECHNOLOGIES	• Python • Java • JavaScript • C++ • C# • AWS • Azure • GCP • Hadoop • Spark • Flink • TensorFlow • PyTorch • scikit-learn • SQL • NoSQL • relational databases	• graph databases • Docker • Kubernetes • OpenStack • TCP/IP • HTTP • DNS • VPN • firewalls • intrusion detection systems • encryption • Jenkins • Ansible • Terraform • Slack • Microsoft Teams • GitHub
WORK EXPERIENCE	**Entry Level:** 1-3 years	
CREDENTIALS	**Required:** High School Diploma **Sometimes Required:** Associates or Bachelor degree	**Optional/Dependent on Specialty - Certifications:** CCNA Routing and Switching Certification (CCNA RS) from Cisco, Cisco Certified Network Associate (CCNA), Cisco Certified Network Associate Security (CCNA Security) from Cisco, Network+ from CompTIA, Cisco Certified Entry Networking Technician (CCENT) from Cisco, Microsoft Certified Solutions Associate (MCSD)
OTHER JOB TITLES/ROLES	Data Center Network Engineer, Network Architect, Network Security Engineer, Network Support Engineer, Routing and Switching Engineer, WAN Engineer, Wireless Network Engineer	

INFORMATION TECHNOLOGY

DIGITAL MARKETING SPECIALIST

JOB DESCRIPTION	Digital Marketing Specialists develop and execute marketing campaigns across various digital channels that enhance brand awareness, boost customer engagement and drive sales. Key responsibilities include optimizing website content, managing social media accounts, analyzing web traffic, and executing email marketing and online advertising campaigns. This role demands close collaboration with marketing and sales teams to ensure digital strategies align with overall marketing objectives. Utilizing Search Engine Optimization (SEO) and Search Engine Marketing (SEM) techniques, Specialists enhance online visibility and track performance metrics to identify trends in consumer behavior. Skills required include swift adaptation to new digital marketing tools, technologies, and platforms, ensuring that campaigns are innovative, effective and in line with current digital trends.
KEY FOUNDATIONAL COMPETENCIES	Adaptability, Basic Computer Competencies, Communication, Critical & Analytical Thinking, Customer Focus, Dependability, Detail Orientation, Humility, Initiative, Instruction/Teaching, Integrity, Interpersonal Competencies, Leadership, Lifelong Learning, Mathematics, Problem Solving/Decision Making, Professionalism, Reading, Scheduling/Coordinating, Science & Technology, Teamwork and Writing.

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
DIGITAL MARKETING STRATEGIES AND PLANNING Developing comprehensive plans to promote brands or products online through various digital channels, tailored to reach target audiences effectively.	Can understand basic digital marketing concepts and apply them to simple campaigns.	Can effectively develop and implement comprehensive digital marketing strategies aligned with business objectives.	Possesses in-depth expertise in digital marketing strategies and planning, utilizing advanced techniques to create data-driven, multi-channel campaigns that achieve measurable results.
CONTENT CREATION AND MARKETING Crafting engaging content for different platforms to attract and retain an audience, and drive profitable customer action.	Can create basic digital content, such as blog posts and social media graphics.	Can effectively develop and produce high-quality digital content that is engaging, informative, and optimized for search engines and social media platforms. The ability effectively and efficiently plan becomes more apparent.	Possesses in-depth expertise in content creation and marketing, utilizing storytelling techniques, content optimization strategies, and analytics tools to create a consistent and impactful brand presence across digital channels.
SEARCH ENGINE OPTIMIZATION (SEO) Optimizing website content to rank higher in search engine results, increasing organic traffic.	Can understand basic SEO concepts and apply them to simple website optimization tasks.	Can effectively implement SEO strategies to improve website rankings, increase organic traffic, and drive qualified leads. The ability effectively and efficiently plan becomes more apparent.	Possesses in-depth expertise in SEO, conducting keyword research, optimizing website content and structure, building backlinks, and analyzing SEO performance to maximize organic visibility and search engine results.
PAY-PER-CLICK (PPC) ADVERTISING Managing online advertising where the marketer pays a fee each time one of their ads is clicked.	Can understand basic PPC advertising concepts and manage simple PPC campaigns.	Can effectively manage and optimize PPC campaigns across various platforms, such as Google Ads and Bing Ads, to reach target audiences and achieve desired campaign goals. The ability effectively and efficiently plan becomes more apparent.	Possesses in-depth expertise in PPC advertising, developing targeted campaigns, managing bidding strategies, analyzing performance data, and optimizing campaigns for maximum ROI.

INFORMATION TECHNOLOGY

DIGITAL MARKETING SPECIALIST

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
EMAIL MARKETING AND AUTOMATION Sending targeted email campaigns to nurture leads and customers, often using automation tools to personalize messages and send them at scale.	Can understand basic email marketing concepts and create simple email campaigns.	Can effectively develop and implement email marketing campaigns that are personalized, engaging, and aligned with customer behavior and preferences.	Possesses in-depth expertise in email marketing and automation, utilizing segmentation strategies, email automation tools, and analytics to create targeted, personalized campaigns that drive engagement, conversion, and customer retention.
SOCIAL MEDIA MARKETING AND MANAGEMENT Creating and distributing content across social media platforms to meet marketing goals, and managing community engagement.	Can understand basic social media marketing concepts and manage simple social media profiles.	Can effectively develop and execute social media strategies that align with brand identity, engage target audiences, and drive measurable results.	Possesses in-depth expertise in social media marketing and management, utilizing social media analytics tools, influencer marketing, and social media advertising to build a strong brand presence, increase engagement, and achieve business objectives.
ANALYTICS AND REPORTING Using data analytics to track marketing campaign performance, and generating reports to inform strategy adjustments.	Can understand basic digital marketing analytics concepts and interpret simple reports.	Can effectively collect, analyze, and interpret digital marketing data to measure campaign performance, identify trends, and make informed decisions.	Possesses in-depth expertise in digital marketing analytics, utilizing advanced analytics tools and techniques to track key metrics, attribute conversions, and gain actionable insights for continuous campaign improvement.
PROJECT MANAGEMENT AND ADAPTABILITY Overseeing digital marketing projects from conception to execution, with the ability to adapt strategies in response to changing market trends or company goals.	Can manage simple digital marketing projects and adapt to basic changes in requirements.	Can effectively manage complex digital marketing projects, juggling multiple tasks, meeting deadlines, and adapting to changing project requirements.	Possesses in-depth expertise in project management and adaptability, prioritizing tasks effectively, delegating responsibilities, and adapting strategies to respond to evolving market trends, technological advancements, and business needs.

INFORMATION TECHNOLOGY

DIGITAL MARKETING SPECIALIST

SALARY RANGE	**Entry Level:** $40,000-$70,000	**Advanced Level:** $85,000-$107,000
TECHNOLOGIES	• Web development: HTML, CSS, JavaScript, React, Angular, Vue.js, Node.js • Mobile development: Java, Kotlin, Swift, Flutter, React Native • Backend development: Python, Java, Go, C++, Ruby, PHP • Databases: SQL, NoSQL, MySQL, PostgreSQL, MongoDB, Cassandra • Cloud computing: AWS, Azure, GCP • Other technologies: Docker, Kubernetes, Git, Linux, DevOps, CI/CD • Adobe	
WORK EXPERIENCE	**Entry Level:** 0-2 years	
CREDENTIALS	**Required:** High School Diploma **Sometimes Required:** Associates or Bachelor degree	**Optional/Dependent on Specialty - Certifications:** Google Ads Fundamentals, Facebook Blueprint Associate, Digital Marketing Certification, Social Marketing Certification, SEO Essential Training, Google Analytics Fundaentals
OTHER JOB TITLES/ROLES	Content Marketing Specialist, Conversion Rate Optimization (CRO) Specialist, Email Marketing Specialist, Marketing Automation Specialist, Paid Media Specialist, SEO Specialist, Social Media Marketing Specialist, Web Analytics Specialist. Communications Specialist, Communications Coordinator	

INFORMATION TECHNOLOGY

ECOMMERCE SPECIALIST

JOB DESCRIPTION	An eCommerce Specialist is a professional who manages and oversees online sales strategies for businesses that sell products or services online. Their primary responsibilities include managing the company's website, ensuring a seamless shopping experience, analyzing, and responding to consumer behavior, and developing online marketing strategies. They also monitor the site's performance, handle online transactions, troubleshoot eCommerce issues, and work to optimize web traffic and customer engagement through SEO and SEM tactics. Collaborating with web developers and designers, creating content, managing inventory, and analyzing sales data to improve business outcomes are also key aspects of the role. The eCommerce Specialist aims to maximize online sales and enhance the customer's online shopping experience.
KEY FOUNDATIONAL COMPETENCIES	Adaptability, Basic Computer Competencies, Communication, Critical & Analytical Thinking, Customer Focus, Dependability, Detail Orientation, Humility, Initiative, Instruction/Teaching, Integrity, Interpersonal Competencies, Leadership, Lifelong Learning, Mathematics, Problem Solving/Decision Making, Professionalism, Reading, Scheduling/Coordinating, Science & Technology, Teamwork and Writing.

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
E-COMMERCE FUNDAMENTALS AND PRINCIPLES Understanding the basics of online business, including the mechanics of online selling, purchasing and the digital customer journey.	Understands basic e-commerce concepts and principles, including online sales channels, customer acquisition strategies, and order fulfillment processes.	Can effectively apply e-commerce principles to develop and implement successful online sales strategies, considering factors such as target audience, product positioning, and pricing strategies.	Possesses in-depth expertise in e-commerce fundamentals and principles, utilizing advanced techniques to optimize online sales, maximize customer lifetime value, and drive business growth through e-commerce channels.
E-COMMERCE PLATFORM MANAGEMENT Overseeing the operation and maintenance of e-commerce websites or platforms, including functionality, user experience and technical aspects.	Can manage basic e-commerce platforms, such as Shopify or WooCommerce, and understand their key functionalities.	Can effectively utilize e-commerce platforms to create and manage online stores, including product listings, inventory management, payment processing, and shipping options.	Possesses in-depth expertise in e-commerce platform management, utilizing advanced features and customization options to create a seamless and optimized online shopping experience.
PRODUCT CONTENT CREATION AND OPTIMIZATION Developing and enhancing product listings with SEO-friendly descriptions, images, and other content to improve visibility and sales.	Can create basic product descriptions and understand the importance of product optimization for search engines.	Can effectively develop compelling and engaging product descriptions that are optimized for search engines, increasing product visibility, and driving organic traffic.	Possesses in-depth expertise in product content creation and optimization, utilizing storytelling techniques, SEO best practices, and conversion psychology to create product descriptions that capture attention, highlight product benefits, and encourage conversions.
E-COMMERCE MARKETING AND PROMOTION Crafting and executing marketing strategies to promote products or services online through various digital channels.	Understands basic e-commerce marketing channels, such as email marketing, social media marketing, and search engine optimization (SEO).	Can effectively implement e-commerce marketing campaigns across various channels, utilizing targeted messaging, engaging content, and analytics to drive traffic, increase conversions, and build brand awareness.	Possesses in-depth expertise in e-commerce marketing and promotion, developing comprehensive marketing strategies that integrate multiple channels, leverage data-driven insights, and optimize campaigns for maximum ROI.

INFORMATION TECHNOLOGY

ECOMMERCE SPECIALIST

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
CUSTOMER SERVICE AND ORDER MANAGEMENT Managing customer interactions, inquiries, and orders to ensure a positive shopping experience and efficient order fulfillment.	Can provide basic customer service and understand the importance of order management efficiency.	Can effectively handle customer inquiries, resolve issues promptly, and maintain a positive customer experience throughout the purchase process.	Possesses in-depth expertise in customer service and order management, implementing strategies to enhance customer satisfaction, minimize order processing times, and ensure timely deliveries.
E-COMMERCE ANALYTICS AND REPORTING Analyzing data from e-commerce activities to track performance, optimize strategies and report on results to stakeholders.	Can collect and interpret basic e-commerce data, such as website traffic, conversion rates, and sales figures.	Can effectively analyze e-commerce data to identify trends, measure campaign performance, and make data-driven decisions to improve website performance, marketing strategies, and overall e-commerce success.	Possesses in-depth expertise in e-commerce analytics and reporting, utilizing advanced analytics tools and techniques to gain actionable insights, optimize user experience, and drive continuous improvement in e-commerce operations.
E-COMMERCE TRENDS AND TECHNOLOGY Staying current with the latest trends and technologies in e-commerce to innovate and maintain a competitive edge.	Understands emerging e-commerce trends and technologies, such as mobile commerce, personalization, and artificial intelligence.	Can effectively stay up-to-date with e-commerce trends and technologies, evaluating their potential impact on the business and recommending strategies to adapt and innovate.	Possesses in-depth knowledge of e-commerce trends and technologies, anticipating future developments, identifying emerging opportunities, and leading the implementation of innovative e-commerce solutions to stay ahead of the competition.

INFORMATION TECHNOLOGY

ECOMMERCE SPECIALIST

SALARY RANGE	**Entry Level:** $35,000-$45,000	**Advanced Level:** $60,000-$75,000
TECHNOLOGIES	• Ecommerce Platforms: Shopify, WooCommerce, BigCommerce • Website Analytics Tools: Google Analytics • Marketing Automation Platforms: HubSpot, Marketo, Pardot • Payment Processing Gateways: Stripe, PayPal, Braintree • Search Engine Optimization (SEO) Tools: Ahrefs, SEMrush, Moz • Social Media Management Platforms: Hootsuite, Sprout Social, Buffer • Content Management Systems (CMS): WordPress, Drupal • Conversion Rate Optimization (CRO) Tools: Hotjar, Crazy Egg, Optimizely • Data Visualization Tools: Tableau, Power BI, Google Data Studio • Project Management Tools: Asana, Trello, Jira	
WORK EXPERIENCE	**Entry Level:** 0-1 years	
CREDENTIALS	**Required:** High School Diploma **Sometimes Required:** Associates or Bachelor degree	**Optional/Dependent on Specialty - Certifications:** Google Analytics Individual Qualification (GAIQ), Shopify Fundamentals, HubSpot Ecommerce Marketing Certification, Facebook Blueprint Associate, Hootsuite Social Marketing Certification, DigitalMarketer E-Commerce Certification, eCommerce SEO Course (Reliablesoft), Build, Launch, and Manage E-commerce Stores (Google), eCommerce Marketing Course (Hubspot), eCommerce 2023 Course (Udemy), How to Get a Business Online (Google), eCommerce Essentials (SkillShare), eCommerce Email Marketing (Shopify), eCommerce Masters (Foundr), Foundations of E-commerce (Google), eCommerce Marketing Certification (CXL)
OTHER JOB TITLES/ROLES	Amazon Vendor Manager, Category Manager, Channel Manager, Chief Ecommerce Officer (CEO), Conversion Rate Optimization (CRO) Specialist, Data Analyst, Demand Generation Specialist, Digital Marketing Specialist, Director of Ecommerce, Ecommerce Coordinator, Ecommerce Marketing Specialist, Email Marketing Specialist, Inventory Analyst, Lead Generation Specialist, Market Research Analyst, Marketing Automation Specialist, Merchandising Manager, Operations Manager, Order Fulfillment Specialist, Paid Media Specialist, Pay-Per-Click (PPC) Specialist, Product Manager, Product Marketing Specialist, Product Page Optimization (PPO) Specialist, Project Manager, Quality Assurance (QA) Specialist, Retail Ecommerce Specialist, Revenue Operations Specialist, Search Engine Optimization (SEO) Specialist, Senior Ecommerce Specialist, Social Media Marketing Specialist, Technical Product Manager, Web Analyst, Wholesale Ecommerce Specialist	

INFORMATION TECHNOLOGY

HEALTH IT SPECIALIST

JOB DESCRIPTION

Health Information Technology (IT) Specialists help manage and organize health information data in healthcare settings. Primary responsibilities include ensuring that patient records are accurate, accessible, secure, and maintained in compliance with health regulations and laws. These specialists are adept at using a range of health informatics systems and electronic health records (EHRs) and may help train healthcare staff on new information systems and technologies. This role requires superior technical skills and the ability to troubleshoot and resolve IT issues. Specialists work closely with healthcare providers and IT staff to optimize the use of EHRs and other clinical software, ensuring seamless integration and functionality. Health IT Specialists enhance patient care by facilitating efficient access to health information and supporting the healthcare facility's overall IT infrastructure. Specialists must remain current with technological advances, and develop and implement system improvements and updates.

KEY FOUNDATIONAL COMPETENCIES

Adaptability, Basic Computer Competencies, Communication, Critical & Analytical Thinking, Customer Focus, Dependability, Detail Orientation, Humility, Initiative, Instruction/Teaching, Integrity, Interpersonal Competencies, Leadership, Lifelong Learning, Mathematics, Problem Solving/Decision Making, Professionalism, Reading, Scheduling/Coordinating, Science & Technology, Teamwork and Writing.

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
UNDERSTANDING OF HEALTHCARE AND HEALTH IT Having a foundational knowledge of the healthcare industry, including its structure, policies, and the role of technology in healthcare delivery. It requires familiarity with health IT's impact on patient care, healthcare operations and the broader healthcare system.	Possesses basic knowledge of healthcare terminology, healthcare systems, and the role of health IT in healthcare delivery.	Understands the impact of health IT on healthcare processes, patient care, and organizational efficiency.	Demonstrates in-depth expertise in healthcare and health IT, staying up-to-date with emerging trends and technologies in the field.
HEALTH IT FUNDAMENTALS AND PRINCIPLES This refers to the core concepts and standard practices within the field of health IT. It includes an understanding of basic terminology, the lifecycle of health information and the principles of using technology to manage health data effectively.	Understands fundamental health IT concepts, such as electronic health records (EHRs), electronic prescribing (eRx), and clinical decision support systems (CDSS).	Can effectively apply health IT principles to support patient care, improve clinical workflows, and enhance data-driven decision-making.	Possesses in-depth knowledge of health IT fundamentals and principles, utilizing advanced techniques to optimize healthcare operations, improve patient safety, and drive quality improvements.
HEALTH IT SYSTEMS AND APPLICATIONS Knowledge and proficiency in various health IT systems and applications used in healthcare settings. It covers electronic health records (EHRs), clinical decision support systems (CDSS), and other health-related software tools designed to support healthcare delivery.	Can install, configure, and manage basic health IT systems, such as EHRs and practice management systems.	Can effectively utilize health IT systems to support clinical documentation, medication management, and patient scheduling.	Possesses in-depth expertise in health IT systems and applications, integrating various systems, troubleshooting issues, and ensuring optimal performance.

INFORMATION TECHNOLOGY

HEALTH IT SPECIALIST

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
HEALTH IT DATA MANAGEMENT AND ANALYTICS Focuses on the skills required to collect, manage and analyze health data. It involves understanding data governance, data quality and the use of analytical tools to derive meaningful insights that can inform healthcare decisions and improve patient outcomes.	Can collect, organize, and analyze basic health IT data using spreadsheets and simple data analysis tools.	Can effectively analyze health IT data to identify trends, assess patient outcomes, and support quality improvement initiatives.	Possesses in-depth knowledge of health IT data management and analytics, utilizing advanced data analysis techniques, predictive modeling, and data visualization tools to gain actionable insights for healthcare improvement.
HEALTH IT SECURITY AND PRIVACY Relates to the protection of health information from unauthorized access, use, disclosure, disruption, modification, or destruction. It requires knowledge of security protocols, privacy laws and compliance requirements, including the Health Insurance Portability and Accountability Act (HIPAA).	Understands basic health IT security and privacy concepts, such as HIPAA compliance and data security protocols.	Can implement and maintain health IT security measures to protect patient data and comply with regulatory requirements.	Possesses in-depth expertise in health IT security and privacy, conducting risk assessments, implementing security controls, and responding to security breaches.
HEALTH IT PROJECT MANAGEMENT This involves the ability to plan, execute and oversee health IT projects. It includes understanding project management principles, methodologies, and tools to ensure that health IT initiatives are completed on time, within budget and to specified quality standards.	Can assist with basic project management tasks, such as data gathering, documentation, and communication.	Can effectively manage health IT projects, considering scope, budget, timeline, and stakeholder involvement.	Possesses in-depth knowledge of health IT project management methodologies, leading complex projects from initiation to completion, ensuring successful implementation and adoption.
HEALTH IT COMMUNICATION AND CHANGE MANAGEMENT Effectively communicating health IT-related information and managing the human side of change when implementing new technologies. It requires skills in communication, leadership, and organizational change strategies to ensure smooth transitions and buy-in from all stakeholders.	Can effectively communicate health IT concepts to healthcare providers and other stakeholders.	Can facilitate change management initiatives related to health IT implementation, addressing user concerns, and promoting adoption.	Possesses in-depth expertise in health IT communication and change management, tailoring communication strategies to different audiences, addressing resistance, and ensuring successful user adoption.

INFORMATION TECHNOLOGY

HEALTH IT SPECIALIST

OCCUPATIONAL COMPETENCY	NOVICE	EMERGING	PROFICIENT
HEALTH IT CONTINUOUS IMPROVEMENT AND INNOVATION This area encompasses the ongoing efforts to enhance health IT systems and processes. It involves staying current with emerging technologies, best practices, and innovative solutions in health IT to continually improve the efficiency, effectiveness, and user satisfaction of health IT initiatives.	Understands the importance of continuous improvement in health IT and can participate in basic improvement initiatives.	Can contribute to health IT innovation by identifying areas for improvement, evaluating new technologies, and recommending solutions.	Possesses a passion for innovation in health IT, staying up-to-date with emerging technologies, identifying opportunities for improvement, and championing innovative solutions that enhance healthcare delivery.

INFORMATION TECHNOLOGY

HEALTH IT SPECIALIST

SALARY RANGE	**Entry Level:** $45,000-$60,000	**Advanced Level:** $80,000-$100,000
TECHNOLOGIES	• Electronic health records (EHRs) • Health information exchanges (HIEs) • Clinical decision support (CDS) systems • Telehealth and remote monitoring technologies • Data analytics and reporting tools • Cybersecurity tools • Artificial intelligence (AI) and machine learning (ML) applications • Wearable devices and mobile health (mHealth) apps • Cloud computing and virtual reality (VR) technologies	
WORK EXPERIENCE	**Entry Level:** 1-3 years	
CREDENTIALS	**Required:** High School Diploma **Sometimes Required:** Associates or Bachelor degree	**Optional/Dependent on Specialty - Certifications:** Certified Health Information Technology Specialist (CHTS), Certified Electronic Health Record Specialist (CEHRS), CompTIA A+, Google Data Analytics Individual Qualification (GAIQ), HIPAA Privacy and Security Compliance Training Certificate, Introduction to Healthcare Informatics Certificate, Healthcare IT Project Management Certificate, Health IT Essentials Certificate, Healthcare Data Quality Certificate, Healthcare IT Communication and Leadership Certificate
OTHER JOB TITLES/ROLES	Application Support Specialist, Biomedical Informatics Specialist, Business Intelligence Analyst, Clinical Informatics Specialist, Data Analyst, Data Integration Specialist, Electronic Health Record (EHR) Specialist, Health Information Analyst, Health IT Project Manager, Health IT Security Specialist, Healthcare Data Analyst, Healthcare Data Quality Specialist, Healthcare Systems Analyst, Healthcare Technology Specialist, Informatics Specialist, Medical Informatics Specialist, Network Security Specialist, Patient Data Analyst, Quality Improvement Analyst, Research Informatics Specialist, Systems Analyst, Technical Support Analyst, Telehealth Specialist, Web Developer	

TECHPOINT

ABOUT TECHPOINT

TechPoint is the nucleus and turbocharger for Indiana's tech ecosystem. It is seeking collective, community support to address an imperative to inclusively grow Indiana's tech economy to 230,000 workers by 2030 to transform the economy of Indiana and create sustainable prosperity and quality of life for our citizens and future generations. TechPoint serves the Indiana tech ecosystem by attracting talent (Xtern, for example), growing companies (Scale-Up Initiative, for example), and building community (Mira Awards and TechPointIndex.com, for example). TechPoint is an initiative of the Central Indiana Corporate Partnership (CICP), an organization committed to advancing the entire Central Indiana region.

CAREERS IN TECH

"Careers in Tech" is a dynamic and resource-rich section of the TechPoint website, designed to serve as a comprehensive guide for anyone looking to navigate and thrive in the technology sector. Whether you're a seasoned professional aiming to pivot into tech or a newcomer eager to kickstart your career, this platform offers invaluable insights into the most in-demand tech roles, essential skills, and the latest industry trends. By visiting "Careers in Tech," you'll gain access to a wealth of information on how to align your career path with the future of technology, understand the needs of the market, and discover opportunities that match your skills and ambitions. The section is meticulously curated with advice from industry leaders, data-driven reports, and real-world success stories to inspire and guide you toward achieving your career goals in the fast-evolving tech landscape. Embark on your journey to a rewarding tech career by exploring the "Careers in Tech" section of the TechPoint website today and unlock the door to endless possibilities in the world of technology.

SKILLS-FIRST HIRING

"Skills-First Hiring" heralds a revolutionary shift in the recruitment landscape, emphasizing the value of an individual's practical skills and problem-solving abilities over traditional academic qualifications. This forward-thinking approach, detailed in the "Skills-First Hiring" section of the TechPoint website, offers hiring managers, HR professionals, and employers a comprehensive guide to reimagining talent acquisition and development strategies. For hiring managers and HR professionals, this section is a treasure trove of insights on how to identify, attract, and retain the right talent based on the competencies that truly matter for the role and the organization's success. It provides strategies for crafting job descriptions that resonate with skill-rich candidates, conducting assessments that accurately gauge a candidate's abilities, and fostering a workplace culture that values continuous learning and skill development. Employers will find in "Skills-First Hiring" a blueprint for building a resilient and adaptive workforce capable of driving innovation and growth. This approach not only broadens the talent pool by including candidates with diverse experiences and backgrounds but also aligns talent development with the dynamic needs of the tech industry. By prioritizing skills, employers can enhance team performance, fuel creativity, and ensure their organization stays competitive in a rapidly evolving market. Visiting the "Skills-First Hiring" section equips you with the knowledge and tools to lead the change towards a more inclusive and effective hiring process. It's an invitation to be at the forefront of the skills-first movement, transforming how talent is recognized and nurtured in your organization. Explore this section today to redefine success in your teams and projects and position your company as a leader in the future of work.

THANK YOU

Thanks to the employers for their time and efforts in creating these maps and pathways!

ACCENTURE
AUNALYTICS
BELDEN INC.
BLUE POLARIS LLC
BOYCE FORMS-SYSTEMS
COMMUNITY HEALTH NETWORK
CONEXUS
CROSSLAKE TECHNOLOGIES
CUMMINS
CVS HEALTH
DATA 317
DMI
ELI LILLY AND COMPANY
ELLIPSIS EDUCATION
ELEVEN FIFTY ACADEMY
FGX INTERNATIONAL
GAYLOR ELECTRIC
GENESYS
HC1
HIGH ALPHA
HIRONS
HOLY CROSS COLLEGE
INDIANA DEPARTMENT OF HOMELAND SECURITY
INDIANA MANAGEMENT PERFORMANCE HUB
INDIANA OFFICE OF TECHNOLOGY
INFOSYS
IRONWORKZ
IVY TECH COMMUNITY COLLEGE
JOBWORKS INC.
KINNEY GROUP
LHP ENGINEERING SOLUTIONS
LITERA
MATRIX INTEGRATION
MOSAIC DATA SCIENTISTS
MOSER CONSULTING
NAVAL SURFACE WARFARE CENTER, CRANE DIVISION
ORACLE CORPORATION
PARKVIEW HEALTH
PERSONIFY
PURDUE COLLEGE OF PHARMACY
RESULTANT
SALESFORCE
SANDLER DTB
SELA
SEP
SPRINGBUK
STAR BANK
STELLAR
SUBARU
THE ENGINEERED INNOVATION GROUP
TRANSCEND CONSULTING
UKG
VESPA GROUP
WUNDERKIN
XCLOGENICS

TECHPOINT