CRYPTOGRAPHER/
CRYPTANALYST

AKA
ENCRYPTION
EXPERT



DEGREE REQUIRED?

Yes

Master's Degree Focusing on Mathematics or Computer Science is Encouraged

MEDIAN SALARY

+\$100,000

JOB GROWTH

21%

SOFT SKILLS

Intelligent, Analytical & Creative

Capable of Tackling

Complex Mathematical Problems

Trustworthiness

- Protect important information from interception, copying, modification and/or deletion
- ► Evaluate, analyze and target weaknesses in cryptographic security systems and algorithms
- Design robust security systems to prevent vulnerabilities
- Develop statistical and mathematical models to analyze data and solve security problems
- ▶ Test computational models for reliability and accuracy
- Investigate, research and test new cryptology theories and applications
- ▶ Probe for weaknesses in communication lines (e.g. wireless network, secure telephone, cellphones, email, etc.)
- Ensure message transmission data (e.g. wireless network, secure telephone, cellphones, email, etc.) are not illegally accessed or altered in transit
- ▶ Decode cryptic messages and coding systems for military, political and/or law enforcement agencies









CYBER



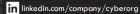












CYBER CRIME **INVESTIGATOR**

CAREER PROFILE:



DEGREE REQUIRED?

NO

Certification(s) encouraged but not essential Experience can supplement

MEDIAN SALARY

+\$67,000

JOB GROWTH

10%

SOFT SKILLS

Curiosity & Persistence Strong Communication Information Use Critical Thinking

- Find and navigate the dark web
- Process crime scenes
- ► Conduct interviews of victims, witnesses, and/or suspects
- Examine recovered data for information
- ► Fuse computer network attack analyses with criminal and counterintelligence investigations and operations
- Determine whether a security incident is indicative of a violation of law that requires specific legal action
- ▶ Identify elements of proof of the crime
- ▶ Identify, collect, and seize documentary or physical evidence, to include digital media and logs associated with cyber intrusion incidents, investigations, and operations
- Provide criminal investigative support to trial counsel during the judicial process
- Prepare reports to document the investigation









CYBER



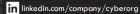












CYBER DEFENSE INCIDENT RESPONDER



No

Bachelor's Degree in Cybersecurity or Computer Science is a plus though

MEDIAN SALARY

+\$80,000

JOB GROWTH

+20%

SOFT SKILLS

Capable of Handling Stress
Flexible
Problem-Solving
Analytical
Good Communication

- Actively monitor systems and networks for intrusions
- ▶ Identify security flaws and vulnerabilities
- Perform security audits, risk analysis, network forensics and penetration testing
- ▶ Perform malware analysis and reverse engineering
- Develop a procedural set of responses to security problems
- ► Establish protocols for communication within an organization and dealings with law enforcement during security incidents
- Create a program development plan that includes security gap assessments, policies, procedures, playbooks, training and tabletop testing
- ▶ Produce detailed incident reports and technical briefs for management, admins and end-users
- Liaison with other cyber threat analysis entities











CYBER



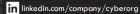












CYBER FORENSICS EXPERT



Yes

Bachelor's Degree
in Cybersecurity or
Computer Science
[Master's Degree in Computer Forensics helps]

MEDIAN SALARY

+\$70,000

JOB GROWTH

+28%

SOFT SKILLS

Curiosity & Insight Strong Communication

Ability to Write Reports & Explain Evidence, Potentially in Front of Lawyers & Judges

- Conduct data breach and security incident investigations
- Recover and examine data from computers and electronic storage devices
- ▶ Dismantle and rebuild damaged systems to retrieve lost data
- Identify additional systems/networks compromised by cyber attacks
- Compile evidence for legal cases
- Draft technical reports, write declarations and prepare evidence for trial
- Give expert counsel to attorneys about electronic evidence in a case
- Advise law enforcement on the credibility of acquired data
- Train law enforcement officers on computer evidence procedures
- Keep abreast of emerging technologies, software and methodologies









CYBER



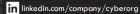












CYBER LEGAL ADVISOR



DEGREE REQUIRED?

Yes

Juris Doctorate Degree is required

MEDIAN SALARY

\$92,000

JOB GROWTH

28%

SOFT SKILLS

Good communicator
Good listener
Approachable
Interpersonal skills

- Advocate for an organization in legal and legislative proceedings
- Evaluate contracts
- Evaluate regulations, policies and procedures
- ▶ Interpret and apply laws
- ▶ Resolve conflicts in policies and procedures
- Maintain a working knowledge of relevant constitutional issues
- ▶ Evaluate the impact of changes to laws and regulations
- ► Help implement changes to laws
- ► Provide legal guidance to management, personnel, or clients









CYBER



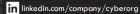














COMMON JOB DUTIES

 Create new ways to solve existing production security issues

- Configure and install firewalls and intrusion detection systems
- ▶ Perform vulnerability testing, risk analyses and security assessments
- Develop automation scripts to handle and track incidents
- Investigate intrusion incidents, conduct forensic investigations and mount incident responses
- ► Collaborate with colleagues on authentication, authorization and encryption solutions
- Evaluate new technologies and processes that enhance security capabilities
- ▶ Test security solutions using industry standard analysis criteria
- ► Respond to information security issues during each stage of a project's lifecycle
- ▶ Define, implement and maintain corporate security policies

DEGREE REQUIRED?

Yes

Bachelor's Degree in Cybersecurity or Computer Science

MEDIAN SALARY

+\$90,000

JOB GROWTH

+20%

SOFT SKILLS

Complex Problem Solving
Creativity
Strong Communication
Ability to Work in a Team
Capable of Handling Stress









CYBER



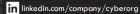












SYSTEMS SYSTEMS SECURITY MANAGER



DEGREE REQUIRED?

Yes

Bachelor's Degree in Cybersecurity or Computer Science

MEDIAN SALARY

\$110,000

JOB GROWTH

+20%

SOFT SKILLS

Strong Leadership Good Communication Efficient Multi-tasker Creative Problem Solver Comfortable Delegating

- ▶ Manage organizational resources (time, money, personnel, etc.) to support security goals and policies
- Create and execute strategies to improve the reliability and security of IT projects
- Define, implement and maintain corporate security policies and procedures
- Spearhead vulnerability audits, forensic investigations and mitigation procedures
- Respond immediately to security-related incidents and provide a thorough post-event analysis
- Manage a diverse team of security administrators, analysts and IT professionals
- ▶ Advise leadership on organization's cybersecurity status
- ► Institute organization-wide training in security awareness, protocols and procedures
- Assess, test and select new security products and technologies









CYBER



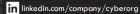














IT PROJECT MANAGER



Yes

Bachelor's Degree

in Systems Management, Strategic Planning, Engineering & Technology, or Related Field

MEDIAN SALARY

+\$97,000

JOB GROWTH

12%

SOFT SKILLS

Leadership & Team Building
Resource Management
Technology Use
Systems Thinking

- Develop methods to monitor and measure risk, compliance, and assurance efforts
- Provide advice on project costs, design concepts, or design changes
- Review or conduct audits of information technology (IT) programs and projects
- Manage end-to-end customer service
- ▶ Gather feedback on customer satisfaction and internal service performance to foster continual improvement
- Develop supply chain, system, network, performance, and cybersecurity requirements
- ▶ Identify and address cyber workforce planning and management issues (e.g. recruitment, retention, and training)
- Lead and oversee budget, staffing, and contracting
- Draft and publish supply chain security and risk management documents









CYBER



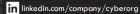














MULTI-DISCIPLINED LANGUAGE ANALYST



DEGREE REQUIRED?

Yes

Bachelor's Degree in target language is encouraged if applicant is not a native speaker

MEDIAN SALARY

\$55,000

JOB GROWTH

42%

SOFT SKILLS

Good Communicator

Detail-oriented

Analytical

Identify contexts & subtleties in written & verbal communications

- Analyze and process information using language and cultural expertise
- ▶ Compile and interpret data for intelligence
- Assess a target's motivation and frame of reference for intelligence context
- ▶ Analyze metadata to look for patterns, anomalies, or events
- ▶ Identify cyber threat tactics
- ▶ Identify foreign languages and dialects in inital source data
- ▶ Help optimize the development of language processing tools
- ► Analyze social network activities
- ▶ Translate voice and graphic data
- ▶ Identify cyber or technology-related terminology used in target languages









CYBER



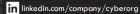












SOFTWARE DEVELOPER



DEGREE REQUIRED?

Yes

Associate's Degree

(A Bachelor's or Master's in Computer Science is Encouraged)

MEDIAN SALARY

\$70,000

JOB GROWTH

24%

SOFT SKILLS

Good Communicator

Able to Work on a Team

Analytical

Meet Deadlines

- Develops, creates, maintains, and write/code computer applications, software, or utility programs
- Design, implement, and test software
- Assist in the development of a company-wide software security strategy
- Facilitate meetings and workshops to define client processes and needs
- Create new software systems or forensic tools
- ▶ Participate in the life-cycle development of software systems using different methodologies
- Design and build proof-of-concept prototype solutions
- ► Institute programming techniques that are free from logical design and technical implementation flaws
- Gain a thorough knowledge of attack vectors that may be used to exploit software
- Support software deployments to customers











CYBER







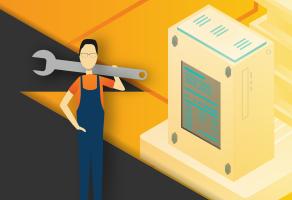








TECHNICAL SUPPORT SPECIALIST



DEGREE REQUIRED?

NO

Certification(s) encouraged but not essential Experience can supplement

MEDIAN SALARY

\$50,000

JOB GROWTH

11%

SOFT SKILLS

Complex Problem Solving
Systems Thinking
Attention to Detail
Resource Management

- Install and maintain network infrastructures, device operating systems
- ► Troubleshoot system hardware and software issues
- ▶ Analyze incident data for emerging trends
- Develop and deliver technical training to users and other customers
- ▶ Diagnose and resolve customer-reported system incidents, problems, and security events
- ► Make recommendations based on trend analysis for changes to software and hardware to enhance user experience
- Install and configure hardware, software, and other equipment for system users that adheres to security standards
- Administer accounts, network rights, and access to systems and equipment
- Perform asset management/inventory of information technology (IT) resources











CYBER















VULNERABILITY ASSESSMENT ANALYST

AKA

VULNERABILITY ASSESSOR



- No
- Real-world experience is much more valued than a degree, though a degree won't hurt

DEGREE REQUIRED?

MEDIAN SALARY

\$75,000

JOB GROWTH

+20%

SOFT SKILLS

Alternative Problem Solving Curious & Creative Attention to Detail Strong Communication Interest in Hacking

- Identify critical flaws in applications and systems that cyber attackers could exploit
- Conduct vulnerability assessments for networks, applications and operating systems
- Conduct network security audits and scanning on a predetermined basis
- Use automated tools (e.g. Nessus) to pinpoint vulnerabilities and reduce time-consuming tasks
- Use manual testing techniques and methods to gain a better understanding of the environment and reduce false negatives
- Develop, test and modify custom scripts and applications for vulnerability testing
- Compile and track vulnerabilities over time for metrics purposes
- Write and present a comprehensive Vulnerability Assessment and maintain a database
- Supply hands-on training for network and systems administrators









CYBER

















CYBER OPERATOR



Yes

Bachelor's in Computer Science/Engineering Certification(s) recommended

MEDIAN SALARY

+\$100,000

JOB GROWTH

20%

SOFT SKILLS

Critical Thinking

Excellent Communication
(written and verbal)

Analytical

- Analyze network architecture, tools and procedures for ways to improve performance
- Identify potential points of strength and vulnerability within a network
- Collect and process information on wireless networks and connected devices
- Deploy, test, and utilize network tools
- Monitor and track diagnostic information on network health
- Operate and maintain automated systems for gaining access to networks
- Collaborate with development organizations to create and deploy the tools needed to achieve objectives
- Conduct exploitation testing of devices and networks











CYBER



















- Develop test plans to address specifications and requirements
- Analyze the results of software, hardware, or interoperability testing
- Test, evaluate, and verify hardware and/or software to determine compliance with defined specifications and requirements
- Install and maintain network infrastructure device operating system software (e.g., IOS, firmware)
- ▶ Make recommendations based on test results
- ► Perform developmental testing on systems under development
- Record and manage test data
- Validate specifications and requirements for testability

DEGREE REQUIRED?

CAREER PROFILE:

No

Certification(s) recommended; experience can supplement

MEDIAN SALARY

+\$47,000

JOB GROWTH

+20%

SOFT SKILLS

Planning & organization
Problem-solving
Analytical
Systems thinking









CYBER

















SYSTEMS ADMINISTRATOR



No

However, Bachelor of Science in IT/Network Administration recommended

MEDIAN SALARY

+\$62,000

JOB GROWTH

+8%

SOFT SKILLS

Strong Leader & Communicator
Organization
Problem-Solver
Analytical

- Manage accounts, network rights, and access to systems and equipment
- Maintain baseline system security according to organizational policies
- Provide ongoing optimization and problem-solving support
- Install, update, and troubleshoot systems/servers
- Troubleshoot hardware/software interface and interoperability problems
- Oversee installation, implementation, configuration, and support of system components
- Manage system/server resources including performance, capacity, availability, serviceability, and recoverability
- Design group policies and access control lists to ensure compatibility with organizational standards, business rules, and needs











CYBER

















DEGREE REQUIRED?

No

But Bachelor's Degree is recommended Certifications encouraged

MEDIAN SALARY

+\$83,000

JOB GROWTH

~20%

SOFT SKILLS

Adaptability
Good judgement
Teamwork
Good communicator

- Develop detailed plans of cyber operations (cyber ops) and leads teams in executing the plans
- Communicate complex information, concepts, and ideas through verbal, written, or visual means
- Develop plans for how to handle potential cybersecurity crisis
- Use policy expertise to help develop, negotiate, and staff action plans for cyber ops
- Identify cyber intelligence gaps and shortfalls for cyber operational planning
- Document "lessons learned" that convey the results of events and/or exercises
- Maintain situational awareness of cyber-related intelligence requirements
- Prepare and present cyber ops briefings









CYBER







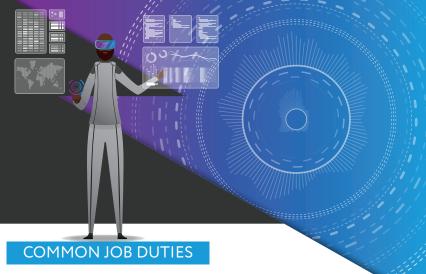








INFORMATION ASSURANCE **ANALYST**



DEGREE REQUIRED?

Yes

Bachelor's in Cybersecurity or Computer Science Master's Degree Encouraged

MEDIAN SALARY

\$100,000

JOB GROWTH

31%

SOFT SKILLS

Organized
Ability to Work Well

Under Pressure

Analytical

- Develop and implement plans to safeguard various types of files and stored data
- Configure, install, operate, & maintain hardware & software for an organization
- Develop new and evolve existing infrastructure and participate in technical research to identify industry best-practices
- ► Ensure all organization operating systems, software, & system hardware are protected, and compliant with rules & policies
- Perform regular security checks
- Verify the integrity and availability of all technological resources (servers, hardware, software, and other relevant systems)
- Review system and application logs to determine if backup procedures are functioning
- Maintain all relevant documentation related to information security
- Analyze organization's information assurance policy









CYBER















KNOWLEDGE MANAGER



DEGREE REQUIRED?

No

But Bachelor's Degree is recommended Certifications encouraged

MEDIAN SALARY

\$75,000

JOB GROWTH

11%

SOFT SKILLS

Multitasking Leadership Big-picture vision Responsible

- ► Help organizations to identify, document, and access intellectual assets like employee expertise, best practices, and organizational knowledge
- ► Perform information searches, knowledge mapping, and knowledge management
- Knowledge of laws, regulations, policies, and ethics as they relate to cybersecurity and privacy
- ► Ensuring compliance with Payment Card Industry and Personal Health Information data security standards
- Design, build, implement, and maintain a knowledge management framework that provides end-users access to the organization's intellectual capital
- Promote knowledge sharing between information owners/users through an organization's operational processes and systems
- ▶ Lead efforts to promote the organization's use of knowledge management and information sharing











CYBER

















DEGREE REQUIRED?

Yes

Bachelor's Degree in Cybersecurity or Computer Science

MEDIAN SALARY

\$85,000

JOB GROWTH

30%

SOFT SKILLS

Ability to Learn Quickly
Teamwork
Strong Written & Verbal
Communication

- Identify and attempt to exploit weaknesses in computer networks and systems
- Simulate cyber attacks and data breaches to access secure information
- Bypass established security protocols and other network defenses
- Document process and create detailed reports of weaknesses in systems
- ▶ Ethically hack into computer networks and data servers
- Identify and configure tools to break into computers, networks, and servers
- Communicate exposed vulnerabilities and risk-level of computer systems and networks
- Educate organizations and staff on areas of risk and cyber-safety best practices
- Cooperate with upper-management and law enforcement









CYBER



















DEGREE REQUIRED?

Yes

Bachelor's in Cybersecurity IT, or Computer Science

Certifications Encouraged

MEDIAN SALARY

\$119,000

JOB GROWTH

30%

SOFT SKILLS

Collaborative
Ability to Work Well
Under Pressure
Analytical

- Provide subject matter expertise to the development of cyber operations-specific indicators
- Monitor open source websites for hostile content directed towards organizational or partner interests
- ► Collaborate with intelligence analysts and targeting organizations involved in related areas
- ► Conduct in-depth research and analysis
- Use gathered intelligence to counter incoming threats and prevent potential threats
- Provide current intelligence support to critical internal/external stakeholders as appropriate
- Identify threat tactics and methodologies
- Provide evaluation and feedback necessary for improving intelligence production, intelligence reporting, collection requirements, and operations







CYBER













