**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

**COMMON JOB DUTIES**
- 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

for more info
The National Integrated Cyber Education Research Center (NICERC) offers grant-funded cyber curricula, professional development, and career resources. Our goal is to empower educators and grow the cyber workforce of tomorrow.
JOB PROFILE: CYBER CRIME INVESTIGATOR

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

COMMON JOB DUTIES

- 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

for more info
The National Integrated Cyber Education Research Center (NICERC) offers grant-funded cyber curricula, professional development, and career resources. Our goal is to empower educators and grow the cyber workforce of tomorrow.
DEGREE REQUIRED?

No

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

MEDIAN SALARY

+$80,000

JOB GROWTH

+20%

SOFTWARE SKILLS

Capable of Handling Stress
Flexible
Problem-Solving
Analytical
Good Communication

COMMON JOB DUTIES

▶ 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

for more info
The National Integrated Cyber Education Research Center (NICERC) offers grant-funded cyber curricula, professional development, and career resources. Our goal is to empower educators and grow the cyber workforce of tomorrow.
**JOB PROFILE:**

**CYBER FORENSICS EXPERT**

**DEGREE REQUIRED?**
Yes
Bachelor’s Degree in Cybersecurity or Computer Science
[Master’s Degree in Computer Forensics helps]

**MEDIAN SALARY**
$70,000+

**JOB GROWTH**
+28%

**SOFTWARE SKILLS**
Curiosity & Insight
Strong Communication
Ability to Write Reports & Explain Evidence, Potentially in Front of Lawyers & Judges

**COMMON JOB DUTIES**
- 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
The National Integrated Cyber Education Research Center (NICERC) offers grant-funded cyber curricula, professional development, and career resources. Our goal is to empower educators and grow the cyber workforce of tomorrow.
**DEGREE REQUIRED?**

Yes

Juris Doctorate Degree is required

**MEDIAN SALARY**

$92,000

**JOB GROWTH**

28%

**SOFT SKILLS**

- Good communicator
- Good listener
- Approachable
- Interpersonal skills

**COMMON JOB DUTIES**

- 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

**JOB PROFILE:**

CYBER LEGAL ADVISOR

Advocate for an organization in legal and legislative proceedings.
The National Integrated Cyber Education Research Center (NICERC) offers grant-funded cyber curricula, professional development, and career resources. Our goal is to empower educators and grow the cyber workforce of tomorrow.
** JOB PROFILE:**

**CYBER SECURITY ENGINEER**

- **DEGREE REQUIRED?** Yes
  Bachelor’s Degree in Cybersecurity or Computer Science

- **MEDIAN SALARY** +$90,000

- **JOB GROWTH** +20%

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

- **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
The National Integrated Cyber Education Research Center (NICERC) offers grant-funded cyber curricula, professional development, and career resources. Our goal is to empower educators and grow the cyber workforce of tomorrow.
**DEGREE REQUIRED?**
Yes
Bachelor’s Degree in Cybersecurity or Computer Science

**MEDIAN SALARY**
$110,000

**JOB GROWTH**
+20%

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

**COMMON JOB DUTIES**
- 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
The National Integrated Cyber Education Research Center (NICERC) offers grant-funded cyber curricula, professional development, and career resources. Our goal is to empower educators and grow the cyber workforce of tomorrow.
IT PROJECT MANAGER

DEGREE REQUIRED?
Yes
Bachelor’s Degree in Systems Management, Strategic Planning, Engineering & Technology, or Related Field

MEDIAN SALARY
+$97,000

JOB GROWTH
12%

 COMMON JOB DUTIES
▶ 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

SOFT SKILLS
Leadership & Team Building
Resource Management
Technology Use
Systems Thinking
The National Integrated Cyber Education Research Center (NICERC) offers grant-funded cyber curricula, professional development, and career resources. Our goal is to empower educators and grow the cyber workforce of tomorrow.
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

COMMON JOB DUTIES
- 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 initial 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

MULTI-DISCIPLINED LANGUAGE ANALYST

JOB PROFILE:

for more info
The National Integrated Cyber Education Research Center (NICERC) offers grant-funded cyber curricula, professional development, and career resources. Our goal is to empower educators and grow the cyber workforce of tomorrow.
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

COMMON JOB DUTIES

- 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
The National Integrated Cyber Education Research Center (NICERC) offers grant-funded cyber curricula, professional development, and career resources. Our goal is to empower educators and grow the cyber workforce of tomorrow.
**JOB PROFILE:**

**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

**COMMON JOB DUTIES**

- 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
The National Integrated Cyber Education Research Center (NICERC) offers grant-funded cyber curricula, professional development, and career resources. Our goal is to empower educators and grow the cyber workforce of tomorrow.
JOB PROFILE: VULNERABILITY ASSESSMENT ANALYST
AKA VULNERABILITY ASSESSOR

DEGREE REQUIRED?
No
Real-world experience is much more valued than a degree, though a degree won’t hurt

MEDIAN SALARY
$75,000

JOB GROWTH
+20%

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

COMMON JOB DUTIES
▶ 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
The National Integrated Cyber Education Research Center (NICERC) offers grant-funded cyber curricula, professional development, and career resources. Our goal is to empower educators and grow the cyber workforce of tomorrow.
**JOB PROFILE: CYBER OPERATOR**

**DEGREE REQUIRED?**

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

**COMMON JOB DUTIES**

- 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

for more info
The National Integrated Cyber Education Research Center (NICERC) offers grant-funded cyber curricula, professional development, and career resources. Our goal is to empower educators and grow the cyber workforce of tomorrow.