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**CYBER SKYLINE**

The National Cyber League  
A Community Where Cybersecurity Is a Passion

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## NCL Spring 2023 Team Game Scouting Report

Dear Ryan Kleffman (Team "LSC-2023-Spring-CyberHawks"),

Thank you for participating in the National Cyber League (NCL) 2023 Spring Season! Our goal is to prepare the next generation of cybersecurity professionals, and your participation is helping achieve that goal.

The NCL was founded in May 2011 to provide an ongoing virtual training ground for collegiate students to develop, practice, and validate their cybersecurity skills in preparation for further learning, industry certifications, and career readiness. The NCL scenario-based challenges were designed around performance-based exam objectives of CompTIA certifications and are aligned to the National Initiative for Cybersecurity Education (NICE) Cybersecurity Workforce Framework published by the National Institute of Standards and Technology (NIST).

As you look to a future career in cybersecurity, we hope you find this report to be valuable in both validating skills and identifying areas for improvement across the nine NCL skills categories. You can use this NCL Scouting Report to:

- Validate your skills to employers in any job application or professional portfolio;
- Show case your achievements and strengths by including the Score Card view of your performance as part of your résumé or simply sharing the validation link so that others may view the detailed version of this report.

The NCL 2023 Spring Season had 7,820 students/players and 533 faculty/coaches from more than 450 two- and four-year schools & 250 high schools across all 50 U.S. states registered to play. The Individual Game Capture the Flag (CTF) event took place from March 31 through April 2. The Team Game CTF event took place from April 14 through April 16. The games were conducted in real-time for students across the country. You were in the Experienced Students Bracket, consisting of students enrolled in advanced degrees or hold extensive industry working experience.

NCL is powered by Cyber Skyline's cloud-based skills evaluation platform. Cyber Skyline hosted the scenario-driven cybersecurity challenges for players to compete and track their progress in real-time.



To validate this report, please access: [cyberskyline.com/report/193GTY4DQFJ1](https://cyberskyline.com/report/193GTY4DQFJ1)

Congratulations for your participation in the NCL 2023 Spring Team Game! We hope you will continue to develop your knowledge and skills and make meaningful contributions as part of the Information Security workforce!

Dr. David Zeichick  
NCL Commissioner



POWERED BY  
**CYBER SKYLINE**

**EXPERIENCED  
STUDENTS RANK  
70<sup>TH</sup> PLACE  
OUT OF 316  
PERCENTILE  
78<sup>TH</sup>**

### NATIONAL CYBER LEAGUE SCORE CARD

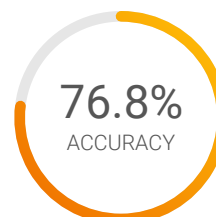
NCL 2023 SPRING TEAM GAME

#### YOUR TOP CATEGORIES

**ENUMERATION &  
EXPLOITATION  
85<sup>TH</sup> PERCENTILE**

**WEB APPLICATION  
EXPLOITATION  
83<sup>RD</sup> PERCENTILE**

**FORENSICS  
82<sup>ND</sup> PERCENTILE**



Average: 73.1%

[cyberskyline.com/report/193GTY4DQFJ1](https://cyberskyline.com/report/193GTY4DQFJ1)



## NCL Spring 2023 Team Game

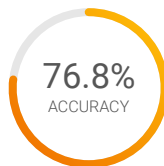
The NCL Team Game is designed for student players nationwide to compete in realtime in the categories listed below. The Team Game promotes camaraderie and evaluates the collective technical cybersecurity skills of the team members.

**70<sup>TH</sup> PLACE**  
OUT OF 316  
EXPERIENCED STUDENTS RANK

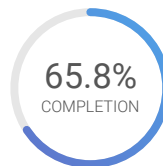
**78<sup>th</sup>** Experienced Students  
Percentile

**1735** POINTS  
OUT OF 3000  
PERFORMANCE SCORE

Average: 1508.8 Points



Average: 73.1%



Average: 60.3%

### Cryptography

Identify techniques used to encrypt or obfuscate messages and leverage tools to extract the plaintext.

**155** POINTS  
OUT OF 355

**88.9%**  
ACCURACY

COMPLETION: **66.7%**

### Enumeration & Exploitation

Identify actionable exploits and vulnerabilities and use them to bypass the security measures in code and compiled binaries.

**110** POINTS  
OUT OF 300

**100.0%**  
ACCURACY

COMPLETION: **66.7%**

### Forensics

Utilize the proper tools and techniques to analyze, process, recover, and/or investigate digital evidence in a computer-related incident.

**200** POINTS  
OUT OF 300

**85.7%**  
ACCURACY

COMPLETION: **66.7%**

### Log Analysis

Utilize the proper tools and techniques to establish a baseline for normal operation and identify malicious activities using log files from various services.

**120** POINTS  
OUT OF 300

**55.6%**  
ACCURACY

COMPLETION: **50.0%**

### Network Traffic Analysis

Identify malicious and benign network traffic to demonstrate an understanding of potential security breaches.

**140** POINTS  
OUT OF 365

**47.1%**  
ACCURACY

COMPLETION: **47.1%**

### Open Source Intelligence

Utilize publicly available information such as search engines, public repositories, social media, and more to gain in-depth knowledge on a topic or target.

**350** POINTS  
OUT OF 350

**81.3%**  
ACCURACY

COMPLETION: **100.0%**

### Password Cracking

Try your hand at cracking these passwords.

**180** POINTS  
OUT OF 330

**100.0%**  
ACCURACY

COMPLETION: **70.6%**

### Scanning & Reconnaissance

Identify and use the proper tools to gain intelligence about a target including its services and potential vulnerabilities.

**280** POINTS  
OUT OF 300

**100.0%**  
ACCURACY

COMPLETION: **90.0%**

### Web Application Exploitation

Identify actionable exploits and vulnerabilities and use them to bypass the security measures in online services.

**100** POINTS  
OUT OF 300

**100.0%**  
ACCURACY

COMPLETION: **33.3%**

Note: Survey module (100 points) was excluded from this report.





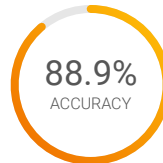
## Cryptography Module

Identify techniques used to encrypt or obfuscate messages and leverage tools to extract the plaintext.

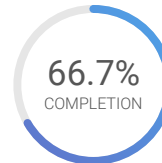
**85<sup>TH</sup> PLACE**  
OUT OF 316  
EXPERIENCED STUDENTS RANK

**155** POINTS  
OUT OF 355  
PERFORMANCE SCORE

Average: 189.5 Points



Average: 75.0%



Average: 68.6%

### TOP NICE WORKROLES

Security Control Assessor  
Secure Software Assessor  
Exploitation Analyst  
Cyber Operator  
Security Architect

### Decoding 1 (Easy)

**30** POINTS  
OUT OF 30

**75.0%**  
ACCURACY

COMPLETION: **100.0%**

Obtain plaintext from messages encoded with common number bases

### Decoding 2 (Easy)

**30** POINTS  
OUT OF 30

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Analyze and obtain the plaintext for a message encrypted with a shift cipher

### Decoding 3 (Easy)

**30** POINTS  
OUT OF 30

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Obtain the plaintext of a message using a keypad cipher

### Decoding 4 (Medium)

**0** POINTS  
OUT OF 50

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

Decrypt an AES encrypted message with a known password

### PGP (Medium)

**0** POINTS  
OUT OF 50

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

Decrypt a PGP message and encrypt a PGP message using provided keys

### Beep Boop (Medium)

**65** POINTS  
OUT OF 65

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Analyze an audio file and decode a message that is encoded with dual-tone multi-frequency signaling

### AutoCrypt (Hard)

**0** POINTS  
OUT OF 100

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

Analyze a cryptographic scheme and find the vulnerability in an autokey cipher to decrypt the message





## Enumeration & Exploitation Module

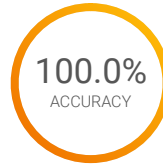
Identify actionable exploits and vulnerabilities and use them to bypass the security measures in code and compiled binaries.

**49<sup>TH</sup> PLACE**  
OUT OF 316  
EXPERIENCED STUDENTS RANK

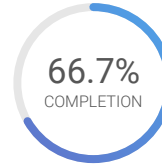
**85<sup>th</sup>** Experienced Students  
Percentile

**110** POINTS  
OUT OF 300  
PERFORMANCE SCORE

Average: 119.3 Points



Average: 79.8%



Average: 61.7%

### TOP NICE WORKROLES

Cyber Operator  
Target Developer  
Exploitation Analyst  
Software Developer  
Systems Security Analyst

### Shinny Stone (Easy)

Analyze Ruby source code to decrypt a message that was encrypted using AES

**100** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

### Vault (Medium)

Extract and analyze a compiled Python file from a macOS mach-o binary

**10** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **50.0%**

### Crypto Coincidence (Hard)

Analyze a compiled C binary and bypass its custom encryption and packing

**0** POINTS  
OUT OF 100

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

## Forensics Module

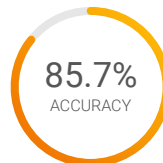
Utilize the proper tools and techniques to analyze, process, recover, and/or investigate digital evidence in a computer-related incident.

**58<sup>TH</sup> PLACE**  
OUT OF 316  
EXPERIENCED STUDENTS RANK

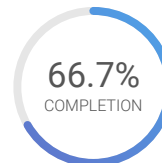
**82<sup>nd</sup>** Experienced Students  
Percentile

**200** POINTS  
OUT OF 300  
PERFORMANCE SCORE

Average: 163.3 Points



Average: 76.0%



Average: 57.4%

### TOP NICE WORKROLES

Cyber Defense Forensics  
Analyst  
Cyber Crime Investigator  
Cyber Defense Incident  
Responder  
Cyber Defense Analyst

### Stacked (Easy)

Find and extract hidden files within an image using tools like binwalk

**100** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

### Hidden (Medium)

Extract hidden information from a macOS .DS\_STORE file

**100** POINTS  
OUT OF 100

**80.0%**  
ACCURACY

COMPLETION: **100.0%**

### Memory (Hard)

Analyze a Linux memory dump using tools like Volatility to extract encryption keys from a Vim buffer and decrypt an in-memory encrypted file

**0** POINTS  
OUT OF 100

**0.0%**  
ACCURACY

COMPLETION: **0.0%**





## Log Analysis Module

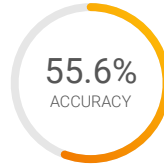
Utilize the proper tools and techniques to establish a baseline for normal operation and identify malicious activities using log files from various services.

**102<sup>ND</sup>** PLACE  
OUT OF 316  
EXPERIENCED STUDENTS RANK

**68<sup>th</sup>** Experienced Students  
Percentile

**120** POINTS  
OUT OF 300  
PERFORMANCE SCORE

Average: 205.4 Points



Average: 71.6%



Average: 73.8%

### TOP NICE WORKROLES

Cyber Defense Analyst  
Systems Security Analyst  
All-Source Analyst  
Cyber Defense Forensics  
Analyst  
Data Analyst

### PGP (Easy)

Analyze clear-signed documents to verify their authenticity using PGP keys

**0** POINTS  
OUT OF 100

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

### Iptables (Medium)

Analyze a iptables log file to identify network traffic patterns

**60** POINTS  
OUT OF 100

**55.6%**  
ACCURACY

COMPLETION: **71.4%**

### Flight Record (Hard)

Parse a binary encoded drone flight record file and extract its fields

**60** POINTS  
OUT OF 100

**55.6%**  
ACCURACY

COMPLETION: **62.5%**

## Network Traffic Analysis Module

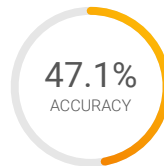
Identify malicious and benign network traffic to demonstrate an understanding of potential security breaches.

**113<sup>TH</sup>** PLACE  
OUT OF 316  
EXPERIENCED STUDENTS RANK

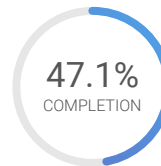
**65<sup>th</sup>** Experienced Students  
Percentile

**140** POINTS  
OUT OF 365  
PERFORMANCE SCORE

Average: 212.9 Points



Average: 57.9%



Average: 66.4%

### TOP NICE WORKROLES

Cyber Defense Analyst  
All-Source Analyst  
Cyber Defense Incident  
Responder  
Target Network Analyst  
Cyber Operator

### Attack (Easy)

Analyze a network packet capture to identify an ARP spoofing attack

**70** POINTS  
OUT OF 100

**33.3%**  
ACCURACY

COMPLETION: **60.0%**

### Chunked (Easy)

Analyze a wireless network packet capture to extract information from the broadcast packets

**25** POINTS  
OUT OF 65

**100.0%**  
ACCURACY

COMPLETION: **66.7%**

### Lighting (Medium)

Analyze a network packet capture to identify the IOT protocol and decode its communications

**45** POINTS  
OUT OF 100

**50.0%**  
ACCURACY

COMPLETION: **50.0%**

### Covert Exfiltration (Hard)

Reassemble a multi-part HTTP file download from a network packet capture

**0** POINTS  
OUT OF 100

**0.0%**  
ACCURACY

COMPLETION: **0.0%**



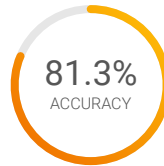


## Open Source Intelligence Module

Utilize publicly available information such as search engines, public repositories, social media, and more to gain in-depth knowledge on a topic or target.

**58<sup>TH</sup> PLACE**  
OUT OF 316  
EXPERIENCED STUDENTS RANK

**350** POINTS  
OUT OF 350  
PERFORMANCE SCORE



Average: 77.3%



Average: 89.7%

### TOP NICE WORKROLES

Systems Security Analyst  
Target Developer  
System Administrator  
Research & Development  
Specialist  
Cyber Intel Planner

**82<sup>ND</sup>** Experienced Students  
Percentile

Average: 288.1 Points

### Rules of Conduct (Easy)

**25** POINTS  
OUT OF 25

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Introductory challenge on acceptable conduct during NCL

### Network Info (Easy)

**50** POINTS  
OUT OF 50

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Extract WiFi network information out of a QR code

### Message in Stone (Medium)

**75** POINTS  
OUT OF 75

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Identify the ancient esoteric alphabet used to hide a secret message

### Restaurant WiFi (Medium)

**100** POINTS  
OUT OF 100

**50.0%**  
ACCURACY

COMPLETION: **100.0%**

Identify the guest WiFi password using openly available information

### Vantage Point (Hard)

**100** POINTS  
OUT OF 100

**66.7%**  
ACCURACY

COMPLETION: **100.0%**

Geolocate a photo without GPS metadata





## Password Cracking Module

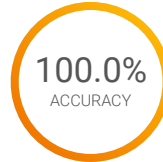
Try your hand at cracking these passwords.

**81** ST PLACE  
OUT OF 316  
EXPERIENCED STUDENTS RANK

**180** POINTS  
OUT OF 330  
PERFORMANCE SCORE

**75<sup>th</sup>** Experienced Students  
Percentile

Average: 162.2 Points



Average: 93.6%



Average: 64.2%

### TOP NICE WORKROLES

Cyber Operator  
Exploitation Analyst  
Systems Security Analyst  
Cyber Defense Incident  
Responder  
Cyber Crime Investigator

### Cracking 1 (Easy)

Crack MD5 password hashes

**30** POINTS  
OUT OF 30

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

### Cracking 2 (Easy)

Crack Windows NTLM password hashes using rainbow tables

**30** POINTS  
OUT OF 30

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

### Cracking 3 (Medium)

Build a wordlist or pattern config to crack password hashes of a known pattern

**45** POINTS  
OUT OF 45

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

### Cracking 4 (Hard)

Crack salted MD5 password hashes

**75** POINTS  
OUT OF 75

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

### Cracking 5 (Hard)

Build a wordlist to crack salted passwords not found in common wordlists

**0** POINTS  
OUT OF 150

**0.0%**  
ACCURACY

COMPLETION: **0.0%**





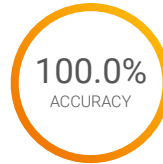
## Scanning & Reconnaissance Module

Identify and use the proper tools to gain intelligence about a target including its services and potential vulnerabilities.

**60<sup>TH</sup> PLACE**  
OUT OF 316  
EXPERIENCED STUDENTS RANK

**280** POINTS  
OUT OF 300  
PERFORMANCE SCORE

Average: 204.3 Points



Average: 95.7%



Average: 69.7%

### TOP NICE WORKROLES

Vulnerability Assessment Analyst  
Target Network Analyst  
Cyber Operations Planner  
Target Developer  
Security Control Assessor

**82<sup>ND</sup>** Experienced Students  
Percentile

### Docker (Easy)

**80** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **80.0%**

Extract metadata information from a Docker container image

### Call to Action (Medium)

**100** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Scan and extract information data from a Redis database

### Database (Hard)

**100** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Scan and extract information data from a MongoDB database

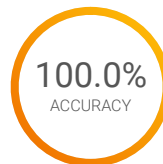
## Web Application Exploitation Module

Identify actionable exploits and vulnerabilities and use them to bypass the security measures in online services.

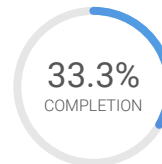
**54<sup>TH</sup> PLACE**  
OUT OF 316  
EXPERIENCED STUDENTS RANK

**100** POINTS  
OUT OF 300  
PERFORMANCE SCORE

Average: 83.8 Points



Average: 77.8%



Average: 37.0%

### TOP NICE WORKROLES

Cyber Operator  
Software Developer  
Exploitation Analyst  
Systems Security Analyst  
Database Administrator

**83<sup>RD</sup>** Experienced Students  
Percentile

### Never Winter Bank (Easy)

**100** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Exploit a bug in the parseInt function of older JavaScript web runtimes

### WebAuthn (Medium)

**0** POINTS  
OUT OF 100

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

Exploit an improperly configured WebAuthn login scheme

### File Server v2 (Hard)

**0** POINTS  
OUT OF 100

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

Exploit a race condition to download a restricted file during server operations

