ENMU Ruidoso Branch Community College
Course Syllabus

Course information:
Semester: Fall
Course #: IS 298
Year: 2021
Title: Programmatic Capstone/Cybersecurity Challenge
CRN #: 11703
Credits: 3

Instructor information:
Instructor: Stephen Miller
E-Mail: stephen.miller@enmu.edu
575 808-1138

Website: ENMU-Ruidoso Cyber Security Center of Excellence
https://ruidoso.enmu.edu/academics/cybersecurity-coe/
Office: Online schedule appointments via e-mail or cell phone.
Class Times: Online 24 x 7.

Rationale for student taking this course:
This course is designed to give the student an understanding and measurement of the knowledge they have acquired over the completion of the Information Systems Cybersecurity degree and Computer and Network Security Certificate programs. The course allows students to apply that knowledge and understanding by participating in the National Cyber League capture the flag cyber challenges, NICE Challenge, and the proactive gymnasium and labs.

Course description:
To offer engaging, entertaining, measurable, and scalable methods of learning to enlist a new generation of cybersecurity professionals. These games will be created and optimized for individuals and teams and are designed to provide hands-on experiences and challenges to help students to develop and improve cybersecurity skills and problem-solving abilities. All games will be conducted remotely, in virtual Cyber Stadiums, equally accessible to all.

Integration of critical skills:
In addition to the content of this course, ENMU-Ruidoso requires incorporating at least 2 of the following 5 essential skills as measurable outcomes in this course. The “X” shows which essential skill you can expect will be focused on in this course.
<table>
<thead>
<tr>
<th>Essential Skill</th>
<th>purpose for the state outcome</th>
<th>focus</th>
<th>evaluated activities and assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>To prepare students to become versatile communicators who can respond to a diverse range of situations with appropriate written, oral, visual, or digital texts and performances.</td>
<td>X</td>
<td>Discussion Board Posts and replies NICE Challenge – submitted documentation on stating problem and how the problem was solved. NCL Team Competition</td>
</tr>
<tr>
<td>Critical thinking</td>
<td>To prepare students to evaluate and connect information and ideas, and construct arguments.</td>
<td>X</td>
<td>NICE Challenge, Infosec Labs NCL GYM, Pre-Season, Individual Game, &amp; Team Game</td>
</tr>
<tr>
<td>Information &amp; Digital Literacy</td>
<td>To prepare students to research and communicate information ethically, within multiple digital environments.</td>
<td>X</td>
<td>Infosec Labs NICE Challenges</td>
</tr>
<tr>
<td>Personal and Social Responsibility</td>
<td>To prepare students to work productively in groups. In addition, this skill prepares students understand and engage with a range of social challenges, perspectives, and world views with an eye toward creating and proposing sustainable solutions and productive interactions.</td>
<td></td>
<td>NCL Team Competition</td>
</tr>
<tr>
<td>Quantitative Reasoning</td>
<td>To prepare students to represent and communicate quantitative information, analyzing and formulating quantitative arguments, and solving quantitative contextual problems.</td>
<td>X</td>
<td>NICE Challenge Infosec Labs NCL GYM, Pre-Season, Individual Game, &amp; Team Game</td>
</tr>
</tbody>
</table>

**Course Objectives/Expected student outcomes or competencies:**

Upon successful completion of this course, the student should be able to:

|   | Providing an inclusive individual and team competitive sport experience  
|   | Enriching the classroom learning experience  
|   | Creating a fun, experiential learning opportunity where students demonstrate skills/knowledge sets  
|   | Promoting proficiency for specific cybersecurity skills  
|   | Preparing students in team environments to solve cybersecurity tasks  
|   | Develop skills tied to curriculum, industry needs, and professional Certifications, I.E. CompTIA A+, Network +, Security+  
|   | Knowledge, Skills, and Abilities to perform NICE Work Roles  
|   | Successful completion of NICE Challenge Labs competency assessments  

National Cyber League (NCL) Website: https://nationalcyberleague.org/home

NCL LEARNING OBJECTIVES:

One of the distinguishing factors of the NCL is the integration of learning objectives in all its activities. The main way this is accomplished is by aligning the preparatory lab exercises available in the NCL Gymnasium the challenges themselves. This allows players to use the NCL Gymnasium to develop knowledge and skills and then demonstrate these newly acquired skills during Preseason, Regular Season and Postseason Games. It also allows the NCL to measure player’s game performance and produce NCL Scouting Report (individualized reports) on strengths and weakness amongst various learning objectives.

NCL Spring 2021 SEASON PREPARATION

There is no previous NCL experience required to participate in NCL’s Spring Season.

Recommendations to prepare for NCL Spring Season are:

Subscribe to NCL and YouTube Channel: https://nationalcyberleague.org/subscribe

- Click Here!
- Signup for webinars via CrowdSource: https://www.crowdcast.io/ncl
- Familiarize yourself with the CyberSkyline
- Understand how SCORING works

Regular Season and Postseason games are based on the NICE Framework performance-based and the NICE Challenge Labs.

Text(s)/Study Guides(s), Manuals:

Required Text: TEXTBOOK – USE PREVIOUS TEXTBOOKS AND CURRENT
ENMU - Ruidoso NCL p2p SharePoint

Required Material(s):

High Speed Internet
One of the following Browsers:

<table>
<thead>
<tr>
<th>System</th>
<th>Web Browser</th>
<th>Version</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows</td>
<td>Mozilla Firefox</td>
<td>3.6.15</td>
<td>Supported</td>
</tr>
<tr>
<td></td>
<td>Internet Explorer</td>
<td>8.0.6</td>
<td>Supported</td>
</tr>
<tr>
<td></td>
<td>Apple Safari</td>
<td>5.0.2</td>
<td>Beta</td>
</tr>
<tr>
<td></td>
<td>Google Chrome</td>
<td>7.0.517</td>
<td>Beta</td>
</tr>
<tr>
<td>Mac</td>
<td>Mozilla Firefox</td>
<td>3.6.15</td>
<td>Supported</td>
</tr>
<tr>
<td></td>
<td>Apple Safari</td>
<td>5.0.2</td>
<td>Beta</td>
</tr>
<tr>
<td>Linux</td>
<td>Mozilla Firefox</td>
<td>3.6.15</td>
<td>Supported</td>
</tr>
</tbody>
</table>
Java
Access to Internet for Online Course via Blackboard. ( “Jump Drive”, “Flash Drive”, “Thumb Drive”, etc.) with 2
Gigabyte capacity or greater (bigger is
better). VMWARE – Virtual Workstation
Kali Linux
WireShark

Requisites for the course: Prerequisites: Faculty Approval and completion of IS131, 253, 257, and 285.

Integration of critical skills:
Upon satisfactory completion of this course, the student will develop the following critical skills:
1) Extensive use of computers will develop computer use skills in both stand-alone and networked environments.
2) Writing skills will be developed through written homework exercises, internet research assignments, and the
use of presentation software.
3) Critical thinking skills will be developed through problem solving exercises in all areas of computer use.

Requirements for course outline:
1) Course Grading and Evaluation

Course Grading Policy:
NICE Challenge Lab (1100 points) information provided in week 1 CANVAS Conference Meeting.

Infosec Lab Assignments: (1500 points) Infosec Lab Access
Codes. There will be nineteen hands-on labs each worth 100
points.
Infosec is a virtual lab environment that will allow students to experience hands-on lab work in order to apply
what they are learning in the course. This hands-on experience also allows students to use IT equipment that
would not
be normally available in your home in an online course.

NCL Cyber League Competition Challenge Capture the flag participation score per semester guidelines in
that semester NCL website.

Final grades will be awarded based on the following scale:

<table>
<thead>
<tr>
<th>Capstone Presentation</th>
<th>500 points</th>
</tr>
</thead>
<tbody>
<tr>
<td>NICE Challenges</td>
<td>1,100 points</td>
</tr>
<tr>
<td>Infosec CompTIA Security+ Labs</td>
<td>1,500 points</td>
</tr>
<tr>
<td>Capture the flag competitions: Preseason Competition</td>
<td>1,000 points</td>
</tr>
<tr>
<td>Individual Game:</td>
<td>1,000 points</td>
</tr>
<tr>
<td>Team Competition</td>
<td>1,000 points</td>
</tr>
<tr>
<td>Total</td>
<td>6,100 points 100%</td>
</tr>
</tbody>
</table>

Grading Scale
5490 – 6100 = A
4880 – 5490 = B
4270 – 4879 = C
3660 – 4269 = D
Below 3659 = F
Season Schedule

**Gymnasium**  
Practice challenges to prepare for NCL  
- **Start Time:** Feb. 15, 1:00 pm EDT  
- **End Time:** May 28, 9:00 pm EDT  
- **Collaboration:** Allowed

**Preseason**  
Compete to get bracketed for Individual Game  
- **Start Time:** Mar. 15, 1:00 pm EDT  
- **End Time:** Mar. 22, 9:00 pm EDT  
- **Collaboration:** Not Allowed

**Individual Game**  
Compete and show off your individual cyber skills  
- **Start Time:** Mar. 26, 1:00 pm EDT  
- **End Time:** Mar. 28, 9:00 pm EDT  
- **Collaboration:** Not Allowed

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**Team Setup**  
Sign up as a team to compete in the Team Game  
- Must complete setup before Apr. 8, 11:59 pm EDT  
- Max 7 Players in a team. Schools may have multiple teams.

**Team Game**  
Compete and show off team performance  
- **Start Time:** Apr. 9, 1:00 pm EDT  
- **End Time:** Apr. 11, 9:00 pm EDT  
- **Collaboration:** Within Team Only

*Note, costs and coordination is handled in class by instructor.*
## Course Calendar (Tentative) To Be Determined once the semester games are available.

<table>
<thead>
<tr>
<th>Week Dates</th>
<th>Lab Number &amp; Chapter(s)</th>
<th>Topics/Assignments</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LM01</strong> 8/17 – 8/23</td>
<td>LM01 - Week 1 - Capstone Introduction</td>
<td>Conference Call with Instructor Syllabus Quiz Introduction to the NCL Website Game Rules Videos on How the games work Overview of resources recommended for NCL Introduction to NICE Challenge Introduction to Cyberskyline Discussion WK01 on NCL Rules</td>
<td>1,6</td>
</tr>
<tr>
<td><strong>LM02</strong> 8/24 – 8/30</td>
<td>LM02 –</td>
<td>NICE Challenge Helpdesk Experience Security Area = <strong>Cyber Defense Analysis</strong> Assignments: <strong>Challenge #1110</strong> Malicious Malware <strong>Challenge #750</strong> Cyber Defense Analysis Lengthy Logs Attack Analysis ▶ <strong>MS Team National Cyber League (NCL) Orientation Conference Meeting 8/26 at 7PM- MST</strong></td>
<td>2,3,4,5,7</td>
</tr>
<tr>
<td><strong>Gym Open: August 23 - December 17</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>LM03</strong> 8/31 – 9/6</td>
<td>LM03 -</td>
<td>NICE Challenge Helpdesk Experience Security Area = <strong>Digital Forensics</strong> Assignments: <strong>Challenge #480</strong> Digital Duplicates <strong>Challenge #1081</strong> Dangerous Drives</td>
<td>2,3,4,5,7</td>
</tr>
<tr>
<td><strong>LM04</strong> 9/7 – 9/13</td>
<td>LM04 -</td>
<td>NICE Challenge Helpdesk Experience Security Area = <strong>Incident Response and Network Services</strong> Assignments: <strong>Challenge #762</strong> Preventative Protection Thwarting the Imminent Threat <strong>Challenge #736</strong> Security Begins &amp; Never Ends with Updates</td>
<td>2,3,4,5,7</td>
</tr>
<tr>
<td><strong>LM05</strong> 9/14 – 9/20</td>
<td>LM05 -</td>
<td>NICE Challenge Helpdesk Experience Security Area = <strong>Systems Administration</strong> Assignments: <strong>Challenge #683</strong> Secure Domain Accounts &amp; Passwords Probably Worth <strong>Challenge #835A</strong> Malicious Mail Management</td>
<td>2,3,4,5,7</td>
</tr>
<tr>
<td><strong>LM06</strong> 9/21 – 9/27</td>
<td>LM06 -</td>
<td>NICE Challenge Helpdesk Experience Security Area = <strong>Systems Analysis</strong> Assignments: <strong>Challenge #729A</strong> Group Policy Protections <strong>Challenge #708A</strong> Vulnerability Scan Complete, Begin System Hardening <strong>Challenge #661A</strong> Strengthening System Security</td>
<td>2,3,4,5,7</td>
</tr>
</tbody>
</table>
| LM07 9/28 – 10/4 | LM07 Ethical Hacking Supported Labs 1 - 3 | NOTE: TWO OPTIONS:  
1) Review the “previous puzzles” document and take Puzzle Quiz.  
2) If you still have an access code to InfoSec Labs complete the InfoSec labs below.  
   - **InfoSec Lab #1** Performing Reconnaissance from the WAN  
   - **InfoSec Lab #2** Scanning the Network on the LAN  
   - **InfoSec Lab #3** Enumeration Hosts using Wireshark, Windows, and Linux Commands | 2,3,4,5,7 |
| LM08 10/5 – 10/11 | LM08 - Ethical Hacking Supported Labs 4 - 7 | NOTE: TWO OPTIONS:  
1) Review the Introduction to Cryptography and take Introduction to Cryptography Quiz and Review the “My National Cyber League (NCL) Prep-Guide – Crypto Kait” and take My  
2) If you still have an access code to InfoSec Labs complete the InfoSec labs below.  
   - **InfoSec Lab #4** Remote and Local Exploitation  
   - **InfoSec Lab #5** Using the Dark Comet Remote Access Trojan (RAT)  
   - **InfoSec Lab #6** Capturing and Analyzing Network Traffic Using a Sniffer  
   - **InfoSec Lab #7** Using SET (Social Engineering Toolkit)  
   - **MS TEAM NCL Preseason Conference Meeting 10/7 at 7PM-MST**  
   - **Mandatory Preseason Game: October 11-18th** | 1,2,3,4,5,6,7 |
| LM09 10/12 – 10/18 | LM09 Ethical Hacking Supported Labs 8 - 11 | NOTE: TWO OPTIONS:  
1) Go to the Cyber Skyline Gym and work on puzzles in the gym providing screen shots of the completed gym puzzles.  
2) If you still have an access code to InfoSec Labs complete the InfoSec labs below.  
   - **InfoSec Lab #8** Performing a Denial of Service Attack from the WAN  
   - **InfoSec Lab #9** Using Browser Exploitation to Take Over a Host’s Computer  
   - **InfoSec Lab #10** Attacking Webservers from the WAN  
   - **InfoSec Lab #11** Exploiting a Vulnerable Web Application | 1-7 |
<table>
<thead>
<tr>
<th>Course</th>
<th>Dates</th>
<th>Description</th>
</tr>
</thead>
</table>
| LM10  | 10/19 – 10/25 | Continue GYM Training  
   **NOTE: TWO OPTIONS: 2,3,4,5,7**  
   1) Go to the Cyber Skyline Gym and work on puzzles in the gym providing screen shots of the completed gym puzzles.  
   2) If you still have an access code to InfoSec Labs complete the InfoSec labs below.  
   - InfoSec Lab #12 Performing SQL Injection to Manipulate Tables in a Database  
   - InfoSec Lab #13 Breaking WEP and WPA and Decrypting the Traffic  
   - InfoSec Lab #14 Attacking the Firewall and Stealing Data over and Encrypted Channel  
   - InfoSec Lab #15 Using Public Key Encryption to Secure Messages  
   ✓ MS Team NCL Individual Game Conference Meeting 10/21 at 7PM MT  
   Mandatory INDIVIDUAL GAME Start Time: Oct. 22, 1:00 pm ET  
   End Time: Oct. 24, 9:00 pm ET  
   Collaboration: Not Allowed  |
| LM11  | 10/26 – 11/1 | Team training in GYM  
   ✓ MS Team NCL Conference Team Kickoff Meeting - Form team(s) and assign Team Captain(s). 10/28 at 7PM-MST- Kickoff Team Workshop Preparation Postseason  
   NCL Team game code REDEMPTION  |
| LM12  | 11/2 – 11/8 |  
   **Mandatory NCL TEAM GAME** 11/5 – 11/7 starts at 1pm ET  
   and ends 11/7pm ET  
   ✓ Collaboration: Within Team Only  |
<p>| LM13  | 11/9 – 11/15 | Work on Capstone paper and presentation  |
| LM14  | 11/16 – 11/23 | Work on Capstone paper and presentation  |</p>
<table>
<thead>
<tr>
<th>Date Range</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/24 – 11/28</td>
<td>THANKSGIVING HOLIDAY</td>
</tr>
<tr>
<td>LM15</td>
<td>Work on Capstone paper and presentation</td>
</tr>
<tr>
<td>11/29 – 12/6</td>
<td></td>
</tr>
<tr>
<td>LM16</td>
<td>CAPSTONE PRESENTATION ASSIGNMENT</td>
</tr>
<tr>
<td>12/7 – 12/10</td>
<td>Capstone CANVAS Presentation CANVAS Fall Season Ends 5/14</td>
</tr>
</tbody>
</table>
Exam Week – ENMU-Ruidoso has instituted an exam week the last week of the semester around which all finals will be organized. The table below shows the final exam schedules for any semester. Exams will be held in the regularly scheduled lecture/lab room. CHECK FOR CONFLICTS EARLY. Any students having more than three examinations scheduled in any one day may notify the instructor of the last examination listed and ask for alternate arrangements. Final exams for weekend and online courses will be held on or before the last day of class.

### Exam Week Schedule

<table>
<thead>
<tr>
<th>If class meets…</th>
<th>Exam will be held…</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Monday</strong></td>
<td></td>
</tr>
<tr>
<td>8 a.m. classes MTWR</td>
<td>8-10 a.m.</td>
</tr>
<tr>
<td>10 a.m. classes that meet MW</td>
<td>10:15 a.m.-12:15 p.m.</td>
</tr>
<tr>
<td>1 p.m. classes that meet MW</td>
<td>1-3 p.m.</td>
</tr>
<tr>
<td>5:30 p.m. classes that meet M</td>
<td>5:30-7:30 p.m.</td>
</tr>
<tr>
<td><strong>Tuesday</strong></td>
<td></td>
</tr>
<tr>
<td>9 a.m. classes MTWR</td>
<td>8-10 a.m.</td>
</tr>
<tr>
<td>10 a.m. classes that meet TR</td>
<td>10:15 a.m.-12:15 p.m.</td>
</tr>
<tr>
<td>1 p.m. classes that meet TR</td>
<td>1-3 p.m.</td>
</tr>
<tr>
<td>5:30 p.m. classes that meet T</td>
<td>5:30-7:30 p.m.</td>
</tr>
<tr>
<td><strong>Wednesday</strong></td>
<td></td>
</tr>
<tr>
<td>11:30 a.m. classes that meet MW</td>
<td>11:30 a.m.-1:30 p.m. or 1-3 p.m.</td>
</tr>
<tr>
<td>5:30 p.m. classes that meet W</td>
<td>5:30-7:30 p.m.</td>
</tr>
<tr>
<td><strong>Thursday</strong></td>
<td></td>
</tr>
<tr>
<td>11:30 a.m. classes that meet TR</td>
<td>11:30 a.m.-1:30 p.m. or 1-3 p.m.</td>
</tr>
<tr>
<td>5:30 p.m. classes that meet R</td>
<td>5:30-7:30 p.m.</td>
</tr>
</tbody>
</table>

**Student Complaint Process:**
If a student is engaged in academic conflict that the student feels is not being fairly managed, the student may file a formal complaint to resolve that conflict with the Vice President of Student Learning and Success. To start the process, please visit the administrative offices or call 575.315.1120.

**Smoke-Free Campus:**
ENMU-Ruidoso is dedicated to providing a safe, healthy and low risk working and learning environment for employees and students. The goal of a safe, healthy and low risk environment can in part be achieved through elimination of smoking, vaping and the use of tobacco products on System property. It is unlawful for a person to smoke, vape or use tobacco products in any indoor workplace or indoor public place (NMSA 1978, § 24-16-4, amended 2019). This policy applies to cigarettes, cigars, pipes, smokeless tobacco, all other tobacco products, and other legal smoking preparations, including but not limited to hookahs, electronic cigarettes, clove cigarettes and other legal smoking preparations. Smoking and use of tobacco products is permitted only in a small number of designated outdoor areas on campus. Smoking, vaping and tobacco use regulations are promulgated under the Dee Johnson Clean Indoor Air Act, NMSA 1978, §§ 24-16-1 thru 20 (1985 as amended through 2019).

**Required Supervision of Minors on Campus:**
Minors under the age of 18 must be accompanied by an adult unless enrolled in a course, an approved activity, or has legitimate business with ENMU-Ruidoso. In addition, minors...
are not allowed in the classroom or on campus while the responsible adult is attending courses. The responsible adult must provide appropriate supervision, even if this means the adult must leave class and the campus.

**Academic Integrity and Standards of Behavior:**
For the complete guide to services available to students and the academic and non-academic rules and regulations governing ENMU-Ruidoso students please, refer to the [Student Handbook](#).

ENMU-Ruidoso has a license agreement with **Turnitin.com**, a service that helps detect plagiarism by comparing student papers with Turnitin's database and Internet sources. Students who take this course agree that all required papers may be submitted to Turnitin.

While students retain copyright on their original course work, papers submitted to Turnitin do become part of Turnitin's reference database for the purposes of detecting plagiarism. Use of the Turnitin service is subject to the Terms and Conditions of Use posted on Turnitin's website at [turnitin.com](#).

Instructors at ENMU-Ruidoso will not tolerate poor student behavior including plagiarism. Plagiarism is:
- Offering the work of another as one's own;
- Offering the work of another without acknowledgment or
- Failing to give credit for quotations or essentially identical expressions of material taken from books, encyclopedias, magazines, other reference works, term papers, reports or sources of any other individual.

Punishment is left up to the instructor and may range from a written warning to expulsion from the university.

**Americans with Disabilities Act:**
If you have physical or learning needs that require accommodation, contact your instructor or the Success Emporium at 575.315.1120 at the beginning of the semester. All efforts will be made to accommodate these needs or to provide equipment necessary to accomplish the requirements for this course. Discussions and documentation will be kept confidential.

**Inclement Weather Closing Policy:**
Students should always assume that classes are meeting as scheduled unless a campus closure notice is posted on the ENMU-Ruidoso website or announced on the radio or television. In the event of a closure due to inclement weather or other emergency, faculty will attempt to notify students in advance of the class meeting. Refer to the website for the complete Inclement Weather Closing Policy and Procedure.

**Class Cancellation Policy:**
Class meetings may not be cancelled by the instructor. If the instructor is ill or unable to hold class for reasons beyond his or her control, a substitute instructor will hold class or students will be given the opportunity to make up missed class time through an alternative meeting time (agreeable to all students) or by completion of an outside assignment.

I have reviewed and understand the entire content of this syllabus and agree to perform in accordance with the information contained therein.