ENMU Ruidoso Branch Community College
Course Syllabus

Course information:
Semester: Spring                      Year: 2020
Course #: IS 298                      Title: Programmatic Capstone/Cybersecurity
                                           Challenge
CRN #: 22600                          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/

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 measureable 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>
</table>


### Communication

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.  

Discussion Board Posts and replies, NICE Challenge – submitted documentation on stating problem and how the problem was solved, NCL Team Competition

### Critical thinking

To prepare students to evaluate and connect information and ideas, and construct arguments.  

NICE Challenge, Infosec Labs, NCL GYM, Pre-Season, Individual Game, & Team Game

### Information & Digital Literacy

To prepare students to research and communicate information ethically, within multiple digital environments.  

Infosec Labs, NICE Challenges

### Personal and Social Responsibility

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.  

NCL Team Competition

### Quantitative Reasoning

To prepare students to represent and communicate quantitative information, analyzing and formulating quantitative arguments, and solving quantitative contextual problems.  

NICE Challenge, Infosec Labs, NCL GYM, Pre-Season, Individual Game, & Team Game

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

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

1. Providing an inclusive individual and team competitive sport experience  
   Enriching the classroom learning experience

2. Creating a fun, experiential learning opportunity where students demonstrate skills/knowledge sets

3. Promoting proficiency for specific cyber skills

4. Preparing teams for other cybersecurity exercises

5. Continuing the acquisition of skills tied to curriculum, industry needs, and professional certifications

6. Enriching the classroom learning experience

7. Successful completion of NICE Challenge Labs.
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 Fall 2017 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’s YouTube Channel: Click Here!
- Work through sample challenges from the 2015 NCL Fall Season (all these are hyperlinked):
  - Meta
  - FTP
  - DNS
  - HTTP
  - Telnet
  - SSH Auth
- Familiarize yourself with the STADIUM
- Understand how SCORING works

Regular Season and Postseason games are based on the CompTIA Security+™ and EC-Council Certified Ethical Hacker (CEH)™ performance-based exam objectives and preparatory lab exercise content.

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

Required Text:
1. TEXTBOOK INFORMATION

Title: Hands-On Ethical Hacking and Network Defense
Author: Michael T. Simpson; Kent Backman; James Corley
ISBN: 978-1-4354-8609-6
Publisher: Delmar Cengage Learning
Publication Date: March 17, 2010
Binding: Trade Paper

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
A USB storage device
Access to Internet for Online Course via Blackboard. ("Jump Drive", "Flash Drive", "Thumb Drive", etc.) with 2 Gigabyte capacity or greater (bigger is better).

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 will be provided in week 7.

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. These labs will also help prepare students that complete this course to take the EC-Ethical Hacking Certification Exam, see the ENMU-Ruidoso Community Education Department to arrange an exam.

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>Final Grade</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>5490 – 6100</td>
</tr>
<tr>
<td>B</td>
<td>4880 – 5490</td>
</tr>
<tr>
<td>C</td>
<td>4270 – 4879</td>
</tr>
<tr>
<td>D</td>
<td>3660 – 4269</td>
</tr>
<tr>
<td>F</td>
<td>Below 3659</td>
</tr>
</tbody>
</table>

Students should expect to put in extra time in order to complete all NICE Challenges, Infosec Labs, Gymnasium, Preseason Game, Individual Game, and Team Competition.

**NCL Spring 2020 Semester**
March 19: Gym Opens

March 23 - March 30: Preseason

April 3 - April 5: Individual Game

April 17 - April 19: Team Game

May 15: Gym Closes and Season Ends

Note, costs and coordination is handled in class by instructor.

The 2020 NCL SPRING SEASON includes select challenges in the NCL Stadium and exercises in the NCL Gyms that will develop and test players in a wide range of knowledge and skills. No previous NCL play required.

The hosted exercises and NCL games are based on the CompTIA Security+™ and EC-Council Certified Ethical Hacker (CEH)™ performance-based exam objectives and include the following content: Open Source Intelligence, Scanning, Enumeration and Exploitation, Password Cracking, Traffic Analysis, Log Analysis, Wireless Security, Cryptography, and Web Application Security.

The NCL cost of $35 includes access to the Gym, the Preseason Game (mandatory to be placed in brackets), the Individual Game (previously called Regular Season), and the Team Game (previously called Postseason)!
## Course Calendar (Tentative) To Be Determined once the semester games are available.

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Lab Number &amp; Chapter(s)</th>
<th>Topics/Assignments</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1/13 – 1/20</td>
<td>LM01 - Week 1 - Capstone Introduction</td>
<td>Conference Call with Instructor&lt;br&gt;MS Team Conference Meeting 17 at 7PM-MST&lt;br&gt;Syllabus Quiz&lt;br&gt;Introduction to the NCL Website&lt;br&gt;Game Rules&lt;br&gt;Videos on How the games work&lt;br&gt;Overview of resources recommended for NCL&lt;br&gt;Introduction to NICE Challenge&lt;br&gt;Introduction to Cyberskyline&lt;br&gt;Discussion WK01 on NCL Rules</td>
<td>1,6</td>
</tr>
<tr>
<td>2</td>
<td>1/21 – 1/27</td>
<td>LM02 –</td>
<td>NICE Challenge Helpdesk Experience&lt;br&gt;Security Area = Cyber Defense Analysis&lt;br&gt;Assignments:&lt;br&gt;<strong>Challenge #1110</strong> Malicious Malware&lt;br&gt;<strong>Challenge #750</strong> Cyber Defense Analysis Lengthy Logs Attack Analysis</td>
<td>2,3,4,5,7</td>
</tr>
<tr>
<td>3</td>
<td>1/28 – 2/3</td>
<td>LM03 -</td>
<td>NICE Challenge Helpdesk Experience&lt;br&gt;Security Area = Digital Forensics Assignments:&lt;br&gt;<strong>Challenge #480</strong> Digital Duplicates&lt;br&gt;<strong>Challenge #1081</strong> Dangerous Drives</td>
<td>2,3,4,5,7</td>
</tr>
<tr>
<td>4</td>
<td>2/4 – 2/10</td>
<td>LM04 -</td>
<td>NICE Challenge Helpdesk Experience&lt;br&gt;Security Area = Incident Response and</td>
<td>2,3,4,5,7</td>
</tr>
<tr>
<td>Week</td>
<td>Assignments</td>
<td>Due Dates</td>
<td>Notes</td>
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<tr>
<td>5</td>
<td><strong>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>2/11 – 2/17</td>
<td>LM05 - 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></td>
</tr>
<tr>
<td>6</td>
<td><strong>Network Services</strong> Assignments: <strong>Challenge #759A</strong> Group Policy Protections <strong>Challenge #708A</strong> Vulnerability Scan Complete, Begin System Hardening <strong>Challenge #661A</strong> Strengthening System Security</td>
<td>2/18 – 2/24</td>
<td>LM06 - 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></td>
</tr>
<tr>
<td>7</td>
<td><strong>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>2/25 – 3/2</td>
<td>LM07 Ethical Hacking Supported Labs 1 - 3</td>
<td>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. - <strong>InfoSec Lab #1</strong> Performing Reconnaissance from the WAN - <strong>InfoSec Lab #2</strong> Scanning the Network on the LAN - <strong>InfoSec Lab #3</strong> Enumeration Hosts using Wireshark, Windows, and Linux Commands</td>
</tr>
<tr>
<td>8</td>
<td><strong>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>3/3 – 3/8</td>
<td>LM08 - Ethical Hacking Supported Labs 4 - 7</td>
<td>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 National Cyber League (NCL) Prep-Guide – Quiz. 2) If you still have an access code to InfoSec Labs complete the InfoSec labs below. - <strong>InfoSec Lab #1</strong> Performing Reconnaissance from the WAN - <strong>InfoSec Lab #2</strong> Scanning the Network on the LAN - <strong>InfoSec Lab #3</strong> Enumeration Hosts using Wireshark, Windows, and Linux Commands</td>
</tr>
<tr>
<td>9</td>
<td><strong>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>3/9 – 3/15</td>
<td>Spring Break</td>
<td><strong>GYM Opens 3/19</strong> <strong>MS TEAM Conference Meeting 3/20 at</strong></td>
</tr>
<tr>
<td>10</td>
<td><strong>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>3/16 – 3/23</td>
<td>LM09 Ethical Hacking Supported Labs 8 - 11</td>
<td><strong>MS TEAM Conference Meeting 3/20 at</strong></td>
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<td></td>
</tr>
<tr>
<td>12</td>
<td>LM12 4/7 – 4/13</td>
<td>MS Team Conference Team Kickoff Meeting 4/7 – 4/13</td>
<td>2,3,4,5,7</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>LM13 - 4/14 – 4/20</td>
<td>Team training in GYM MS Team Conference Meeting 4/14 – 4/20</td>
<td>2,3,4,5,7</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>LM13 -</td>
<td>Capstone paper and presentation</td>
<td>2,3,4,5,7</td>
<td></td>
</tr>
</tbody>
</table>

**7PM-MST**

- **Mandatory Preseason Game Starts 3/23 1P.M. ET – 3/30**

**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 Web servers from the WAN
- **InfoSec Lab #11** Exploiting a Vulnerable Web Application

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**3/31 – 4/6**

- **LM11 –** Continue GYM Training
- **MS Team Conference Meeting 4/2 at 7PM-MST**
- **Individual Season Game (4/3 –4/5) starts 1pm ET 4/3**

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**4/7 – 4/13**

- **LM12**
- **MS Team Conference Team Kickoff Meeting 4/6 at 7PM-MST- Kickoff Team Workshop Preparation**
- **Team training in GYM**
- **Form team(s) and assign Team Captain(s).**

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**4/14 – 4/20**

- **LM13 –**
- **Team training in GYM**
- **MS Team Conference Meeting Nov.14th at 7PM-MST**

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**4/17 – 4/19 starts at 1pm ET.**
If you have questions or need help with a lab please e-mail at stephen.miller@enmu.edu or call me at 575-808-1138.

**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**

*Note for online class exam deadlines see Tentative Course Outline in Syllabus*

<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. To start the process, please visit the administrative offices or call (575) 527-3006.

**No Smoking on Campus** – Effective June 15, 2007 the Dee Johnson Clean Indoor Air Act prohibits smoking at all workplaces and public facilities. In order to comply with the provisions of the law, smoking is banned inside, or within 30 feet of any entrance way.

**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 available at [http://www.ruidoso.enmu.edu/docs/studenthnbk.pdf](http://www.ruidoso.enmu.edu/docs/studenthnbk.pdf).

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 Cindy Holder, Student Affairs Director (257-2120) 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.
Student Agreement

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

____________________________________  ______________
(Student signature)                      Date