Cyber Security Fundamentals - AIT 660 - Spring 2018

DAY, TIME AND LOCATION
Fridays, 4:30 pm - 7:10 pm, Innovation Hall 205, Fairfax Campus

INSTRUCTOR INFORMATION
- Name: Dr. Emanuela Marasco
- Department: Information Sciences and Technology
- Email: emarasco@gmu.edu
- Phone: 703-9935831
- Office Hours: By appointment

DESCRIPTION
The course introduces fundamental security principles and real-world applications of cyber security. Topics covered in the course include access control, common classes of attacks, monitoring, attack and intrusion detection, basic cryptography, computer security models, legal and privacy issues, and risk analysis. The course also provides students with opportunities to gain hands-on experience with several security tools (e.g., protocol analyzers).

LEARNING OBJECTIVES
Upon successful completion of this course, students will:
- Master fundamental cyber security principles;
- Be knowledgeable about practical security issues arising in a wide range of domains;
- Be able to use existing techniques and tools to minimize security risks for an organization;
- Have experience in discussing and writing about security related issues.

REQUIRED MATERIALS

REQUIRED TEXTBOOK


or


The required textbook is available electronically through the Safari Tech Books Online collection. You can access this book by following these steps:
- Type the ISBN number of the book into the search box and click search, then click on the book title in the search results page. The next page that will open is the homepage for the book.
- Click on the Start Reading button to open the book.
COURSE OUTLINE
Below is an outline of the 15 weekly class meetings.

1. [01-26-2018] - **Introduction to the course** - Lecture 1: Accountability and Access Control
2. [02-02-2018] - Lecture 2: Attacks and Monitoring
4. [02-16-2018] - Quiz n. 1 - Lecture 4: Communications Security and Countermeasures
7. [03-09-2018] - Quiz n. 2 - Lecture 7: Malicious Code and Application Attacks
8. [03-23-2018] - Lecture 8: Cryptography and Symmetric Key Algorithms
13. [04-27-2018] - Student presentations
14. [05-04-2018] - Student presentations
15. [05-11-2018] - Final exam

COURSE TOOLS
The following tools will be used in this course.

- ![Blackboard](https://www.blackboard.com) Blackboard: used to post class materials (slides, readings, etc.), and to grade individual class activities.
- ![Piazza](https://piazza.com) Piazza: used to post sample quiz questions and solicit answers from students. Students can also post questions of general interest.

ADDITIONAL INFORMATION

- Students are permitted to interact on homework assignments, but your write-up must be your own. Assignments are intended to provide practical, hands-on experience with the ideas presented in the course.
- Religious observances are one common example of events that might impact students’ activities. Students are responsible for planning ahead. Please, refer to the GMU’s calendar of religious holidays at [http://ulife.gmu.edu/religious_calendar.php](http://ulife.gmu.edu/religious_calendar.php).
- Academic Policy: All academic policies as given in the Honor System and code will be strictly followed. These are available at [http://catalog.gmu.edu/content.php?catoid=19&navoid=4113](http://catalog.gmu.edu/content.php?catoid=19&navoid=4113).
• General Policies: All general policies defined in the University Catalog are in place for this course. You can access those at http://catalog.gmu.edu/content.php?catoid=19&navoid=4114.
• George Mason University is an Honor Code university. Please see the Office of Academic Integrity website http://oai.gmu.edu/the-mason-honor-code-2/ for a full description of the honor code and the honor committee process.
• Students with a documented learning disability or other condition that may affect academic performance should: (i) make sure this documentation is on file with Office of Disability Services (SUB I, Rm. 4205; 993-2474) to determine the accommodations they need; and (ii) talk with the instructor to discuss their accommodation needs.

GRADING POLICY

Grading will be based on class participation, assignments, and exams. Points for course activities will accrue as follow:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Points</th>
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<tbody>
<tr>
<td>Class participation (≠ class attendance)</td>
<td>100</td>
</tr>
<tr>
<td>In-class Quizzes (3 @ 70 points each)</td>
<td>210</td>
</tr>
<tr>
<td>Group Presentation</td>
<td>100</td>
</tr>
<tr>
<td>Final exam</td>
<td>150</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>560</strong></td>
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</tbody>
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Final letter grades are assigned as follows. Breakpoints may be adjusted depending on overall class performance.

<table>
<thead>
<tr>
<th>Point % range</th>
<th>Letter grade</th>
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<tbody>
<tr>
<td>97% - 100%</td>
<td>A+</td>
</tr>
<tr>
<td>93% - 96.9%</td>
<td>A</td>
</tr>
<tr>
<td>90% - 92.9%</td>
<td>A-</td>
</tr>
<tr>
<td>87% - 89.9%</td>
<td>B+</td>
</tr>
<tr>
<td>83% - 86.9%</td>
<td>B</td>
</tr>
<tr>
<td>80% - 82.9%</td>
<td>B-</td>
</tr>
<tr>
<td>77% - 79.9%</td>
<td>C+</td>
</tr>
<tr>
<td>73% - 76.9%</td>
<td>C</td>
</tr>
<tr>
<td>0% - 72.9%</td>
<td>F</td>
</tr>
</tbody>
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Extra Credits. Students who wish to recover credits lost in other course activities can volunteer to prepare and give short presentations (4-5 content slides, 8-10 minutes) on a topic of their choice. Each short presentation will earn up to 25 points, for a maximum of two presentations per student during the entire course. Students must notify the instructor in advance of their intention to give an extra credit presentation. Time and topic of the presentation must be approved by the instructor. Student giving an extra credit presentation must submit their slides to the instructor no later than 3pm on the day of the presentation. Students passing the CISSP exam will earn 50 bonus points. No other extra credit opportunities beyond those mentioned here will be offered to students.
**Attendance.** Regular attendance is strongly recommended. Students will be held responsible for all material covered in class. Quizzes and exams are given on the dates specified on the course schedule. **Absence from taking any quiz/exam will result in a score of zero,** unless cleared in advance with the instructor and arranged for a makeup session. Excusable absences are normally related to unavoidable and documented emergency situations.

**Final Grades.** Final grades are non-negotiable, and cannot be disputed once posted. Any request to adjust grades after they have been posted will be denied unless there has been a factual error on the instructor's side.