COSC 4367.001 Firewall and Intrusion Detection Systems
School of Engineering and Computing Sciences
Fall 2019

A. COURSE INFORMATION
   Course number/section: COSC-4367.001
   Class meeting time: T/TH 5:30 – 6:45 PM
   Class location: CI 230
   Course Website: bb9.tamucc.edu

B. INSTRUCTOR INFORMATION
   Instructor: Dr. Saman Desilva
   Office location: CI 331
   Office hours: T/TH 12:30 PM – 2:00 PM
                T/TH 4:30 AM – 5:30 PM
   Telephone: 361-825-3831
   E-mail: saman.desilva@tamucc.edu (Highly Recommended)
   Appointments: via E-mail

C. COURSE DESCRIPTION
   This is an applied course which focuses on the standards and
technologies used to establish inter-network structures that will support
a TCP/IP data stream for higher-level services to operate over. This course introduces
firewalls, Intrusion Prevention Systems (IPS), and Intrusion Detection Systems (IDS) technology. Topics include Windows, Linux, Check Point
and Cisco firewalls, TCP/IP and open system interconnection (OSI) models, attack traffic
analysis, and network-based and host-based hardware and software. Device configuration will
be examined and evaluated with appropriate exercises.

D. PREREQUISITES AND COREQUISITES
   Prerequisites
   COSC 2437 - Data Structures, COSC 3365 - Cyber Defense I, COSC 3366 - Network Security,

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES
   Required Textbook(s)
   Linux Firewalls

   Supplies
   Computer and VMware
F. STUDENT LEARNING OUTCOMES AND ASSESSMENT

By the end of this course, students should be able to:

1. Evaluate the effectiveness of firewalls.
2. Evaluate effective Intrusion Prevention Systems (IPS) and Intrusion Detection System (IDS) systems.
3. Mastery of packet analysis
4. Understand how to effectively apply and deploy technologies and administrative tools in an organizational environment.

G. INSTRUCTIONAL METHODS AND ACTIVITIES

Instructional methods will consist of lectures, in-class exercises, quizzes, and homework assignments.

H. MAJOR COURSE REQUIREMENTS AND GRADING

Student learning outcomes will be measured through the use of homework assignments, exams, and quizzes.

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of the FINAL GRADE</th>
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<tbody>
<tr>
<td>Exams</td>
<td>50</td>
</tr>
<tr>
<td>Quizzes</td>
<td>20</td>
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<tr>
<td>Homework</td>
<td>30</td>
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Grading scale: A: 100-90, B: 89-80, C: 79-70, D: 69-60, and F: 59-0.

Homework Assignments: Approximately 6-10 homework assignments will be given. No late homework assignments will be accepted. Partial credit will be given for incomplete assignments.

Quizzes: There will be several announced and unannounced quizzes during the semester.
I. COURSE CONTENT/SCHEDULE

Tentative Course Schedule (Subject to change)

<table>
<thead>
<tr>
<th>Week 1:</th>
<th>Introduction–Linux – Chp01</th>
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<tbody>
<tr>
<td>Week 2:</td>
<td>iptables, <strong>HW01</strong>-Linux – Chp02, 03, &amp; 04 Network Layer, Transport Layer &amp; Application Layer Attacks, <strong>HW02</strong></td>
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<tr>
<td>Week 3:</td>
<td>Chapter 2</td>
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<td>Week 4:</td>
<td>Chapter 3</td>
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<td>Week 5:</td>
<td>IPS and IDS, <strong>HW04</strong></td>
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<td>Week 6:</td>
<td>IDS and IPS, <strong>HW05</strong>, Exam 1 (10/01/2019)</td>
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<td>Week 7:</td>
<td>Cisco ASA</td>
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<td>Week 8:</td>
<td>Cisco ASA, <strong>HW06</strong></td>
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<td>Week 9:</td>
<td>CISCO ASA, Exam 2 (11/06/2019)</td>
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<td>Week 10:</td>
<td>Attack Analysis – Wireshark, <strong>HW07</strong>,</td>
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<td>Week 11:</td>
<td>Attack Analysis - Lower Layer Protocols – arp, IP, TCP</td>
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<td>Week 12:</td>
<td>Attack Analysis - Lower Layer Protocols – TCP, UDP, ICMP, <strong>HW08</strong></td>
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<tr>
<td>Week 14:</td>
<td>Attack Analysis - Upper Layer Protocols - DHCP, DNS, HTTP</td>
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<tr>
<td><strong>Final Exam</strong></td>
<td>December 10\textsuperscript{th}, 4:30 PM – 7:00 PM</td>
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Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

J. COURSE POLICIES
Course Syllabus: We will meet for lectures on Tuesday and. Non-text material may also be included in the lectures. The assignments, quizzes, and exams will be given during class hours. You are responsible for all the material presented during the lecture.

Exams: Exams will cover all lecture, assignments, quizzes and reading material. Exams must be taken on the hour they are scheduled. In the event, if you cannot attend the class to take the exam due to some emergency or some unavoidable situation (such as serious illness, death in the family, participation in university sports, religious observations, and so on) you must notify me as soon as possible before the exam and also you must validate your absence by providing me a document (e.g., with a letter from your doctor).

Homework Assignments and Quizzes: Approximately 6-10 homework assignments will be given. Partial credit will be given for incomplete assignments. In addition, there may be a quiz from time-to-time. They will significantly be based on the material from the lectures and other material considered essential for the successful completion of this course. They will be handed out in the class during the lecture. The submission details will be provided to you along with the assignment. All the homework assignments are due at the beginning of the class on the due date or due date provided on the blackboard. If the student is absent on the due date, it is the student’s responsibility to see to it that the assignment is submitted on the designated date and for the material covered in the lecture. An assignment that is turned in after the class on the due date is considered one day late. There is a penalty for late submissions. 10% penalty for 1-2 days late, 20% penalty for 3-4 days late, 50% penalty for 5 days late. 100% penalty (i.e. no credit) if submitted after 5 days. If you have not completed your assignment by the due date, you should submit the work you have done for partial credit. No work will be accepted once the graded work has been returned or the solution has been disclosed to the class, except for unusual circumstances which the instructor feels reasonable. Be sure to backup your work. Note that any kind of hardware or software failure or machine unavailability in the lab does not merit an extension on the assignment. Diskettes upon which major examinations, assignments, projects or papers submitted may be retained by the instructor as a permanent record of the student’s work. The instructor is not responsible for your personal computing resources if you are unable to find appropriate resources to do your assignment or study for the exam, feel free to come to the lab during TALab hours.

Grading Error: All questions concerning a test score or grading of a returned test or assignment must be resolved within one week. It is always a good idea to keep all of your work until the end of the semester. In case of any recording errors or doubts, you may produce them for correction or verification.

Extra Credit: There is no EXTRA CREDIT

Academic Honesty Policy: You are expected to avoid all forms of academic dishonesty as defined in Catalog. In addition, students are expected to behave in an ethical manner in all class activities. If you feel uncertain about a particular activity, please speak to me BEFORE problems arise. Ethical behavior is a requirement for passing this course. All work submitted for grading must be the student’s own work. Plagiarism will result in a score of 0 (zero) for
the work or dismissal from the course and the Dean of Students office will be notified. No copying from another student's work, of any class, is allowed. It is the student's duty to allow no one to copy his or her work. Anyone found cheating and/or copying, in the exams or assignments, in the instructor's opinion, will receive an automatic F for the course.

Collaboration: There is no collaboration allowed on homework assignments.

Attendance: You must attend all classes. In-class attendance will affect your grade. You are responsible for any materials covered or handed out or announcements made for the tests, homework assignments in your absence. Records of your attendance will be maintained and reported to the university. Students found missing classes without the instructor’s permission will be automatically withdrawn from the course.

Absence from class: Students are responsible for all materials covered in class and assigned. Should a student be absent from class, it is his/her responsibility to get the notes, etc. for that missed class. More important, should there be assignments, it is the student responsibility to obtain such assignments. No excuse will be accepted for assignments not turned in because the student was absent when it was due.

Cell Phone Use: Cell phones and pagers must be turned off during class. First violation receives a warning. All succeeding violations result in a ten points deduction on the last exam. Any violation during a quiz or exam results in a ten percent deduction off the corresponding paper. No warnings for quizzes or exams.

Laptop Use: Laptops, Tablets cannot be used in the class.

Food in Class: No food in the class or labs.

Student Security Statement: Please read the Student Security Statement.

K. COLLEGE AND UNIVERSITY POLICIES

- Academic Integrity (University)
  University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a failing grade.

- Classroom/Professional Behavior
  Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to
disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

- **Statement of Civility**
  Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high-quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

- **Deadline for Dropping a Course with a grade of W (University)**
  I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. *Please consult with your academic advisor, the Financial Aid Office, and me, before you decide to drop this course.* Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Please consult the Academic Calendar ([http://www.tamucc.edu/academics/calendar/](http://www.tamucc.edu/academics/calendar/)) for the last day to drop a course.

- **Grade Appeals (College of Science and Engineering)**
  As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at [http://www.tamucc.edu/provost/university_rules/index.html](http://www.tamucc.edu/provost/university_rules/index.html), and the College of Science and Engineering Grade Appeals webpage at [http://sci.tamucc.edu/students/GradeAppeal.html](http://sci.tamucc.edu/students/GradeAppeal.html). For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

- **Disability Services**
  The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you
believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

http://disabilityservices.tamucc.edu/

- **Statement of Academic Continuity**
  In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University-Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow the continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

L. **OTHER INFORMATION**

- **Academic Advising**
  The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

**GENERAL DISCLAIMER**

I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.