SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: Network Security

CODE NO. : CSN208   **SEMESTER:** 4

PROGRAM: Computer Network Technician /Technology

AUTHOR: Mark Allemang

DATE: Jan, 2010   **PREVIOUS OUTLINE DATED:** Jan, 2009

APPROVED: "B. Punch"

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                    CHAIR   **DATE**

TOTAL CREDITS: 5

PREREQUISITE(S): CSN120

HOURS/WEEK: 4

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I.   COURSE DESCRIPTION:

This course provides an in-depth study of network security issues, standards, best practices and current threats. Supported by extensive lab work, system vulnerabilities will be investigated and solutions implemented using a variety of operating systems and security tools.

II.   LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course the student will demonstrate the ability to:

1.   Understand network security principles and develop strategies for dealing with common network vulnerabilities and security issues.

Potential Elements of the Performance:
- Understand the need for network security and the tradeoffs associated with implementing security.
- Practice ethical behaviour as a network administrator.
- Identify legal issues associated with network administration and implement a security policy for network users to follow.
- Identify general security issues associated with LANs, WANs, Web Servers, VPNs and Remote Access.
- Identify and defend systems against the major types and categories of security threats.
- Implement virus protection and recovery practices on a network.
- Implement security policies and practices that lead to secure networks.

2.   Deploy firewalls to secure a network

Elements of the Performance:
- Compare different types of firewalls with respect to their principles of operation, their strengths and weaknesses.
- Specify and configure various firewall products to meet particular network requirements.
- Evaluate and compare various commercial firewalls.

3.   Establish security practices to enable local and remote users to connect securely to internal networks.

Elements of the Performance:
- Compare dial-in networking services (RAS), VPNs and other Internet services with respect to their operation and security issues.
- Implement RAS or VPNs enabling secure remote access.
- Implement authentication and password policies that are appropriate for particular situations.

4. Analyze network requirements and plan security based on those requirements

Elements of the Performance:
- Analyze security requirements and be able to specify services, operating systems, and protocols appropriately.
- Identify the steps required to secure your network servers.
- Identify typical methods of securing network services including web and email
- Identify security issues and then implement appropriate security on Windows servers.
- Identify security issues and then implement appropriate security on Unix systems
- Implement security for workstations and common desktops.

5. Develop Intrusion Detection and Response best practices.

Elements of the Performance:
- Describe the various types of intrusion detection systems.
- Compare commercial intrusion detection systems and implement one.
- Develop a security plan and an intrusion response procedure for situations where a site has been attacked.
- Investigate real case studies of network attacks, intrusion detection and recovery.

6. Specify and implement appropriate tools, utilities and practices to prevent/recover from security attacks/intrusions.

Elements of the Performance:
- Use Internet resources to research current security threats and acquire needed software and security patches.
- Use various utilities such as network monitors, packet sniffers, security scanners, intrusion detection systems, password detectors, auditing and integrity checking to protect servers and network resources.

III.   TOPICS TO BE COVERED:
1.   Security Fundamentals and Common Vulnerabilities
2.   Firewalls
3.   Server and Workstation Security
4.   Security Planning and Policies
5.   Intrusion Detection and Response
6.   Security Tools and Best Practices

IV.   REQUIRED STUDENT RESOURCES/TEXTS:

TEXT BOOK: Security + guide to Network Security, 3rd edition, by Mark Ciampa   Published by Course Technology. ISBN:-13   978-1-4283-4066-4

V.   EVALUATION PROCESS/GRADING SYSTEM:

Tests and Quizes   60%
Labs and Assignments   40%
(The percentages shown above may vary slightly if circumstances warrant.)

NOTE: ***It is necessary to pass both the theory and the lab parts of this course.*** *It is not possible to pass the course if a student has a failing average in the quizzes and tests but is passing the lab portion (or vice versa).*

The professor reserves the right to adjust the mark up or down 5% based on attendance, participation, leadership, creativity and whether there is an improving trend.

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A minimum of **80% attendance** required in the labs and lectures.

- Late hand in penalties will be 10% per day. Assignments will not be accepted past one week late unless there are extenuating and legitimate circumstances.
- Makeup Tests are at the discretion of the instructor and will be assigned a maximum grade of 50%.
- The professor reserves the right to adjust the number of tests, practical tests and quizzes based on unforeseen circumstances. The students will be given sufficient notice to any changes and the reasons thereof.
- A student who is absent for 3 or more times without any valid reason or effort to resolve the problem will result in action taken.

NOTE: If action is to be taken, it will range from marks being deducted to a maximum of removal from the course.

The following semester grades will be assigned to students in postsecondary courses:

Grade	*Definition*	*Grade Point Equivalent*
A+	90 – 100%	4.00
A	80 – 89%	
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% and below	0.00

CR (Credit)	Credit for diploma requirements has been awarded.
S	Satisfactory achievement in field /clinical placement or non-graded subject area.
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.
NR	Grade not reported to Registrar's office.
W	Student has withdrawn from the course without academic penalty.

VI.   SPECIAL NOTES:

Course Outline Amendments:
The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Retention of Course Outlines:
It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Prior Learning Assessment:
Students who wish to apply for advance credit transfer (advanced standing) should obtain an Application for Advance Credit from the program coordinator (or the course coordinator regarding a general education transfer request) or academic assistant. Students will be required to provide an unofficial transcript and course outline related to the course in question. Please refer to the Student Academic Calendar of Events for the deadline date by which application must be made for advance standing.

Credit for prior learning will also be given upon successful completion of a challenge exam or portfolio.

Substitute course information is available in the Registrar's office.

Disability Services:
If you are a student with a disability (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Disability Services office. Visit Room E1101 or call Extension 2703 so that support services can be arranged for you.

Communication:
The College considers *WebCT/LMS* as the primary channel of communication for each course. Regularly checking this software platform is critical as it will keep you directly connected with faculty and current course information. Success in this course may be directly related to your willingness to take advantage of the *Learning Management System* communication tool.

Plagiarism:
Students should refer to the definition of "academic dishonesty" in *Student Code of Conduct*. A professor/instructor may assign a sanction as defined below, or make recommendations to the Academic Chair for disposition of the matter. The professor/instructor may (i) issue a verbal reprimand, (ii) make an assignment of a lower grade with explanation, (iii) require additional academic assignments and issue a lower grade upon completion to the maximum grade "C", (iv) make an automatic assignment of a failing grade, (v) recommend to the Chair dismissal from the course with the assignment of a failing grade. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Student Portal:
The Sault College portal allows you to view all your student information in one place. **mysaultcollege** gives you personalized access to online resources seven days a week from your home or school computer. Single log-in access allows you to see your personal and financial information, timetable, grades, records of achievement, unofficial transcript, and outstanding obligations. Announcements, news, the academic calendar of events, class cancellations, your learning management system (LMS), and much more are also accessible through the student portal. Go to https://my.saultcollege.ca.

Electronic Devices in the Classroom:
Students who wish to use electronic devices in the classroom will seek permission of the faculty member before proceeding to record instruction. With the exception of issues related to accommodations of disability, the decision to approve or refuse the request is the responsibility of the faculty member. Recorded classroom instruction will be used only for personal use and will not be used for any other purpose. Recorded classroom instruction will be destroyed at the end of the course. To ensure this, the student is required to return all copies of recorded material to the faculty member by the last day of class in the semester. Where the use of an electronic device has been approved, the student agrees that materials recorded are for his/her use only, are not for distribution, and are the sole property of the College.

Attendance:
Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.

Tuition Default:
Students who have defaulted on the payment of tuition (tuition has not been paid in full, payments were not deferred or payment plan not honoured) as of the first week of *March,* will be removed from placement and clinical activities. This may result in loss of mandatory hours or incomplete course work. Sault College will not be responsible for incomplete hours or outcomes that are not achieved or any other academic requirement not met as of the result of tuition default. Students are encouraged to communicate with Financial Services with regard to the status of their tuition prior to this deadline to ensure that their financial status does not interfere with academic progress.