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BMIS 472.01: Advanced Network & Security Management

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BMIS 472
Advanced Network & Security Management
Spring 2018

Instructor: Dr. Shawn F. Clouse, GBB 328, 243-5985 (office), or 728-5219 (home), shawn.clouse@umontana.edu
Scheduled Time: Tuesday 11:00pm – 1:50pm
Meeting Place: GBB 213
Outside Lab Hours: 1 to 2 hours per week depending on the modules
Office Hours: Monday 9:10am – 10:30am, Wednesday 9:10am – 10:30am, or by appointment

Course Description:

This course focuses on teaching advanced networking principles that include design, setup, operations, and maintenance networks for an organization. There will be a special emphasis on network security and how it aligns with organizational strategy, directory services for access to organizational information, and cybersecurity management. This course will utilize the lab in GBB 213 as well as will bring in outside experts to speak on cybersecurity topics. Every class will include a lecture or discussion on cybersecurity topics along with a hands-on lab demonstrating the concepts.

Credits: This three-credit course fulfills MIS elective degree requirements.

Prerequisites:

This course requires students to have completed BMIS471 or its equivalent from another course or through work experience.

Textbook:

Required
- *Fundamentals of Information systems Security* 3rd Edition, by David Kim & Michael Solomon, Jones & Bartlett, ISBN 978-1-284-11645-8.
- *Labs Toolwire Virtual LiveLabs*, ISBN: 9781284128734
- Print bundle $169.95 or e-Book bundle $149.95. Go to http://www.jblearning.com/catalog/9781284116458/ and select the Ordering Options tab.

Supplemental
- *CISSP Official Study Guide 7th Edition,* by James Michael Stewart, Mike Chapple, and Darril Gibson. PDF available on Moodle. Wiley, ISBN: 978-1-119-04271-6

Course Objectives:

- To expose students to advanced networking and security concepts in the information technology industry. (Knowledge and Comprehension)

- To expose students to the language and terms of information technology and the impact of information systems and cybersecurity concepts on the strategic operations of businesses or organizations. (Knowledge Comprehension, and Application)
- To give students hands-on experience working with state-of-the-art networking hardware and software. (Analysis and Synthesis)
- To allow students to implement information systems theories and practices in a lab environment that simulates real business scenarios. (Synthesis and Evaluation)
- To enable students to develop network/security plans and implement those plans in a laboratory setting. (Synthesis and Evaluation)
- To expose students to the ethical issues facing information technology workers in the areas of networks, security, and data integrity. (Application and Analysis)

Course Topics:

- Explain information systems security and its impact on business and organizations.
- The role of IT operations, administration, & security policies.
- Network and Cybersecurity for the enterprise. Analyze network infrastructure and topologies (Ethernet, Hubs, Switches, and Network Interface Cards).
- How to conduct security audits, security assessments, vulnerability-testing, security monitoring of IT infrastructure for an organization.
- How to handle malicious attacks, threats, and vulnerabilities.
- Develop disaster plans and recovery plans.
- Analyze the principles of risk management and response techniques.
- Using cryptography to maintain information security.
- Review information security standards and U.S. compliance laws.
- Discuss information security professional certifications and job opportunities.
- Ethics of network & security administration.

Grading:
- Student performance will be based on a combination of quizzes (drop the lowest score), assignments, attendance/class participation/labs, and a final project. These four areas are weighted equally for the final grade. The final project will be a group project and require students to demonstrate many of the skills learned throughout the semester.

Activity	Points	% of Course Grade
Quizzes (drop the two lowest)	100	25%
NIST Assignment	100	25%
Labs/Attendance	100	25%
Final Project	100	25%
Total	400	100%

- Final Project – The final project will be working with an area non-profit to conduct an IT security assessment. The assessment will have four parts: 1) the first part will be to

conduct a cybersecurity controls assessment based on the NIST cybersecurity framework, 2) conduct a technical vulnerability scan based on Internet and internal IT systems, 3) conduct a risk assessment, and 4) develop a risk management plan for the organization to address gaps in the NIST framework, to correct vulnerabilities, and to reduce security risks.

- o The class will organize into teams to complete this final project. During the course of the semester, each team will work to complete a professional cybersecurity assessment for a client. Each team will keep a project workbook that will be turned in periodically.
- o **Group Evaluation**: Each group member must fill out an evaluation form for the team project. The evaluation form includes a section for the evaluation of the members of your group. **Your evaluation of the performance of your group mates will be included in their grade for all aspects of the project**. For example, if you receive a 70% for group participation you will only receive 70% of the total points that the group earned on the project. The success of the learning process and the project is dependent on the dedication and commitment of all of the students in the class.
- o **Professional Conduct**: All team members are expected to conduct themselves in a professional manner in all interactions with other team members and with clients. Professional conduct includes promptness and participation at meetings, professional attire in client meetings, sufficient communication with clients and team members, and professional quality deliverables.

- Students wishing to take this class for graduate credit will be required to prepare a research paper on an advanced networking topic. The research paper should address the organizational issues for implementing and operating a network to meet the information technology needs of a business or organization. Students should research the issues associated with cybersecurity and its impact on organizations. The paper should be written in APA format and show that the student has synthesized the research material into a document that makes recommendations for successful implementation of a network system for a business or organization. Students are required to get the research topic approved by the instructor.
- Grades will be assigned based on the following breakdown: A – 90% and above, B – 89% to 80%, C – 79% to 70%, D – 69% to 60%, and F – below 59%.

Class Attendance:

Class attendance is extremely important to succeed in this course. Attendance is mandatory, meaning that you are expected to attend each class period and will be taken at the beginning of most classes. My goal is to know everyone's name by the end of the semester and taking attendance will help me do that. I understand that there will be times when personal issues are unavoidable and take priority. These are the rules on attendance:

- ***Each student will be allowed one (1) excused absences (regardless of reason)***. If you miss more than one time you will receive a negative adjustment your final grade. The professor reserves the right to adjust the student's final grade up to one full letter grade for each absence. You can track your absences in Moodle by pressing the attendance link. Please refer to UM's Class Attendance/Absence Policy for more information (www.umt.edu/catalog/academics/academic-policy-procedure.php).
- It is a good idea to let the professor know when you plan to be gone, just like you would let your boss know when you plan to be absent from work.
- If you are absent, it is your responsibility to obtain any course materials from your peers.

- You are in attendance when your name is called. If you enter class after this time it is your responsibility to let me know you are here. Being punctual and responsible for your own actions is important in both business and life.
- If you need to leave class early, please notify the professor at the beginning of class. Failure to do so may result in the loss of attendance for that day.

Email & Moodle:

- The university policy regarding student e-mail requires faculty members to only correspond with students regarding academic issues if both parties use official UM e-mail addresses. This means that faculty need to use a @business.umt.edu address sent to the student's @umconnect.umt.edu address.
- I try to be timely in my email responses. If you email me during the week you will almost always receive a response that day. Treat all emails as a form of professional communication in the class. Your messages should be well written and grammatically correct. Furthermore, your messages should begin with a proper salutation and closing. **If your email does not meet these standards of professional communication, you will get a response asking you to rewrite it**. Your professional communication skills will be critical to your success in business and this is an excellent opportunity to practice them in the class.
- It is your responsibility to check your email account and Moodle regularly. All email correspondence will be sent to your @UMConnect.umt.edu accounts. You are responsible for all material provided to you through these venues so you should check them both regularly. It is a good idea to keep your **Sent Items** for all email communications.

Academic Misconduct

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. The Code is available for review online at http://www.umt.edu/studentaffairs.

Reasonable Accommodations:

Students with disabilities may request reasonable modifications by contacting me. The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students (DSS). "Reasonable" means the University permits no fundamental alterations of academic standards or retroactive modifications. (For other options see http://www.umt.edu/disability).

School of Business Administration Grievance Policy

Although conflicts between students and professors are rare, they do occasionally occur. Please be aware that the standard operating procedure for dealing with such conflicts within the School of Business Administration is as follows:

1. Try to resolve the conflict directly with the professor.
2. If you feel that the conflict cannot be resolved between yourself and the professor, contact the chair of the Management Information Systems department.

3. If, after speaking with the department chair and the professor, you still feel that the conflict has not been resolved, contact the Associate Dean of the School of Business Administration.

School of Business Administration Mission Statement and Assurance of Learning:

The University of Montana's School of Business Administration enhances lives and benefits society by providing a world-class business education in a supportive, collegial environment.

We accomplish this mission by acting on our shared core values of creating significant experiences, building relationships, teaching and researching relevant topics, behaving ethically, and inspiring individuals to thrive.

As part of our assessment process and assurance-of-learning standards, the School of Business Administration has adopted the following learning goals for our undergraduate students:

- Learning Goal 1: SoBA graduates will possess fundamental business knowledge.
- Learning Goal 2: SoBA graduates will be able to integrate business knowledge.
- Learning Goal 3: SoBA graduates will be effective communicators.
- Learning Goal 4: SoBA graduates will possess problem solving skills.
- Learning Goal 5: SoBA graduates will have an ethical awareness.
- Learning Goal 6: SoBA graduates will be proficient users of technology.
- Learning Goal 7: SoBA graduates will understand the global business environment in which they operate.

SHARED CORE VALUES

- Student-centered, participative, interactive, collegial learning environment
- Teamwork within the School and responsive collaboration with stakeholders
- Life-long learning and professional development
- Excellence, with a focus on continuous improvement
- Innovation and openness to risk
- Maintenance of high-level professionalism
- Integrity in all we do
- Diverse perspectives
- Sustainability, responsiveness and flexibility for an ever changing world

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UNIVERSITY OF
MONTANA
COLLEGE OF BUSINESS
MANAGEMENT INFORMATION SYSTEMS

Tentative Course Schedule

Week	Date	Topic	Tasks
1	1/23	Syllabus and Course Introduction Chapter 14: Information Security Professional Certifications	✓ Read Chapter 1 ✓ Complete Kali Linux USB Drive Assignment
2	1/30	Chapter 1: Information Systems Security	✓ Read Chapter 12 ✓ Complete Lab 1 Performing Reconnaissance & Probing ✓ Prepare for Quiz 1
3	2/6	Quiz 1 Chapter 12: Information Security Standards	✓ Read Chapter 15 ✓ Complete NIST Assignment ✓ Lab 9 Eliminating Threats with a Layered Security Approach
4	2/13	Chapter 15: US Compliance Laws	✓ Read Chapter 3 ✓ Lab 10 Implementing IS Security Policies ✓ Prepare for Quiz 2
5	2/20	Quiz 2 **Guest Speaker: LMG**	✓ Read Chapter 4 ✓ Lab LMG Complete Digital First Responder Lab
6	2/27	Chapter 3: Malicious Attacks, Threats, and Vulnerabilities Chapter 4: The drivers of the Information Security Business	✓ Read Chapter 6 ✓ Lab 2 Performing a vulnerability assessment ✓ Prepare for Quiz 3 on Ch. 3, 4, & LMG presentation.
7	3/6	Quiz 3 Chapter 6: Security Operations & Administration	✓ Read Chapter 7 ✓ Lab 4 Using Group Policy & MS Baseline Security Analyzer
8	3/13	Quiz 4 **Guest Speaker: Morgan Littell KPMG Cybersecurity** **Guest Speaker: Madison Iler, Director, Compliance & Advisory Services at LMG Security** Chapter 7: Auditing, Testing, & Monitoring	✓ Read Chapter 8 ✓ Lab 5 Packet capture and traffic analysis ✓ Form Teams ✓ Select Group Project Assignment ✓ Work on gap analysis using the NIST Framework

Week	Date	Topic		Tasks
9	3/20	**Guest Speaker: Adrian Irish, UM IT Security Officer** Chapter 8: Risk, Response, and Recovery		✓ Read Chapter 9 ✓ Lab 6 Implementing Business Continuity Plan Prepare for Quiz 5 on Ch. 7 & Ch. 8
10	3/27	<mark>Spring Break</mark>		
11	4/3	Quiz 5 Chapter 9: Cryptography		✓ Read Chapter 11 ✓ Lab 7 Using encryption to enhance confidentiality & integrity
12	4/10	Quiz 6 **Guest Speaker: PwC 2:30 to 2:50am** Chapter 11: Malicious Code & Activity		✓ Lab 8 Performing website and database attack by exploiting identified vulnerabilities
13	4/17	Quiz 7 <mark>Work on Projects</mark>		✓ Perform vulnerability scan with client
14	4/24	<mark>Work on Projects</mark>		✓ Work on Risk Assessment with client
15	5/2	<mark>Work on Projects</mark> or Final Presentations		✓ Develop Risk Management Plan for client ✓ Complete final assessment materials for client. ✓ Prepare final presentation
16	Finals Week	Final Presentations & Course Evaluation - **Required** Thursday May 10th 8:00 – 10:00am		✓ Bring two copies of final assessment. One for client and one for grading. ✓ Complete Team Evaluation