



Common Syllabus revised 9/1/2009

This syllabus contains information common to all sections of IT 353 for the Fall 2009 semester. For each section, a customized syllabus with information specific to that section will be made available to registered students via [the Blackboard Learning System](#).

Scheduled Sections

Section	Instructor	Campus	Day	Time
001	Prof. Lyons	Prince William	Wednesdays	4:30–7:10 p.m.

Course Description

IT 353 - Information Defense Technologies

This course will examine and assess the role of information technology as a tool of warfare and civil defense. Topics will be discussed from both defensive and offensive perspectives and will include asset tracking, asymmetric warfare, network centric warfare, physical attacks, cyberterrorism, espionage, psyops, reconnaissance and surveillance, space assets, and applications of GPS and cryptographic technology. Students will research and write about the social, ethical, and political effects of such technology.

Prerequisites

IT 101 (or equivalent), IT 103 (or equivalent), and IT 223.

From http://catalog.gmu.edu/preview_course.php?catoid=5&coid=37979

Prerequisites

The prerequisites for this course are [IT 101](#), [IT 103](#) and [IT 223](#). A grade of "C" or better **must** be achieved in all three prerequisite courses **before** a student is qualified to take this course. The prerequisite courses must be completed prior to, not concurrently with, this course.

This requirement will be **strictly enforced**. Any student who does not meet the prerequisite requirement will be dropped from the course by the Instructor at the start of the semester.

Rationale

This course is intended to prepare students for careers in homeland defense, the military, or defense contracts, and for graduate work in information security and assurance. Students will examine how changes in communications and information technology have led to dramatic changes in both offensive and defensive capabilities as well as exposing new flanks of vulnerability. Social and ethical implications will be carefully considered.

This course is an elective in the IT major Information Security concentration and in the IT minor and IT Undergraduate Certificate programs.

Objectives

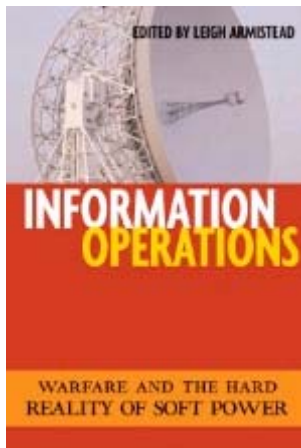
On successful completion of this course, students will:

- Understand the systems used in homeland defense and in military operations and the social and political implications of those systems.
- Be familiar with technologies that enable and support network-centric warfare.
- Understand the importance of tools for data fusion and battlespace awareness.
- Be able to define and explain relevant security concepts, including:
 - threats: insider attacks, distributed denial of service attacks, man-in-the-middle attacks, malicious software, systemic failures;
 - countermeasures: physical security, jamming, intrusion detection, frequency hopping, spread spectrum, shielding;
 - security services: confidentiality, integrity, availability, authentication, access control, non-repudiation.
- Understand the concept of asymmetric warfare and its implications for traditional defense organizations and systems.
- Understand the use of technology to enable attacks against information systems and other strategic assets, and the use of technology to defend against attacks on those assets.
- Be able to write rules of engagement for information warfare operations.

References

Textbooks

There are two required textbooks for this course:

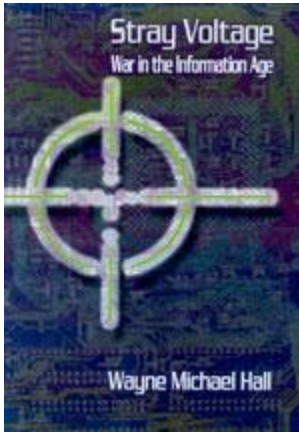


Information Operations: Warfare and the Hard Reality of Soft Power
Edwin L. Armistead
2004; Potomac Books, Inc.

Publisher's price: \$19.20 (as of 9/1/2009)

Publisher's URL:

<http://www.potomacbooksinc.com/Books/BookDetail.aspx?productID=7582>



Stray Voltage: War in the Information Age

Wayne M. Hall

2003; U.S. Naval Institute Press

Publisher's price: \$36.95 (as of 9/1/2009)

Publisher's URL:

http://www.usni.org/store/item.asp?ITEM_ID=1065

Faculty and Staff

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Administrative support:

Cindy Woodfork

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[Bull Run Hall](#), Suite 102

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Grading

Grades will be awarded in accordance with the Mason Grading System for undergraduate students. See <http://www.gmu.edu/catalog/apolicies/> under [Grading System](#) for more information.

The grading scale for this course is:

97 – 100%	A+	Passing
93 – 96%	A	Passing
90 – 92%	A-	Passing
87 – 89%	B+	Passing
83 – 86%	B	Passing
80 – 82%	B-	Passing
77 – 79%	C+	Passing
73 – 76%	C	Passing
70 – 72%	C-	Passing
60 – 69%	D	Passing
0 – 59%	F	Failing

Raw scores may be adjusted by the Instructor to calculate final grades.

Final grades will be determined based on the following components:

Assignments	20%
Project	40%
Mid-term exam	20%
Final exam	20%

These components are outlined in the following sections.

Assignments

Work will be assigned in class from time to time. Some class sessions may include time in a computer lab classroom, but students are expected to devote additional time as needed to complete lab work. Each lab assignment is to be prepared and submitted as specified by the Instructor. Late assignments may not be accepted – if accepted, a penalty may be applied. Acceptance of late assignments and/or application of penalties will be at the sole discretion of the Instructor.

Project

Students will work in assigned teams to collectively complete a class project. The project requirements will be discussed in class and are subject to change throughout the semester. Each student's grade for this component will be based in part on peer evaluations.

Mid-term exam

The mid-term exam will be conducted during the seventh scheduled class session and will be based on topics addressed in Lectures 1-6. The mid-term exam will be “closed book” – no reference materials other than those provided with the exam paper will be permitted. Mid-term exams will be returned to students once they have been graded.

Final exam

The final exam will be held during the scheduled final exam session (see <http://registrar.gmu.edu/calendars/2009FallExam.html>) and will be based on topics addressed throughout the entire course. The final exam will be “closed book” – no reference materials other than those provided with the exam paper will be permitted. Final exams will be retained by the [Department of Applied Information Technology](#) and will not be returned to students.

Final grades will be posted to [PatriotWeb](#), which is the only vehicle for students to obtain those grades. A student with a "hold" on his/her PatriotWeb account will be unable to access final grades until the hold has been removed by the Registrar.

Schedule

Lecture	Content	Reading	
		Armistead	Hall
1	Introductions, Logistics, Overview History of warfare; Ethics in war Project introduction		
2	Elements of national power Asymmetric warfare	Chapter 1	Chapters 1-3
3	Information operations	Chapter 2	Chapters 4, 5
4	Psychological operations Perception management	Chapters 3, 9	Chapter 6
5	Platform-centric warfare Network-centric warfare		Chapters 7, 8
6	Surveillance, reconnaissance, espionage Robotics and unmanned vehicles Review for mid-term exam		Chapter 9
7	Mid-term exam Project work		
8	Space warfare		
9	Project work		
10	Project rehearsal		
11	Project exercise		
12	Project post-exercise work		
13	Project presentations		
14	War, crime, and terrorism Cyber defense; Civil-defense Review for final exam	Chapters 4, 5, 7, 8	Chapter 10
-	Final exam		

The reading assignment shown for each lecture is to be completed **prior to** that lecture.

This schedule is subject to revision before and throughout the course.

Registered students should see [the Blackboard Learning System](#) for the latest class schedule.

Important Dates

Last day to add classes	September 15
Last day to drop with no tuition penalty	September 15
Last day to drop	October 2
Thanksgiving recess	November 25-29

From <http://registrar.gmu.edu/calendars/2009Fall.html>.

See that Web page for more information.

Religious Holidays

A list of religious holidays is available on the [University Life Calendar page](#). Any student whose religious observance conflicts with a scheduled course activity must contact the Instructor **at least 2 weeks in advance** of the conflict date in order to make alternative arrangements.

Attendance Policy

Students are expected to attend every class, to complete any required preparatory work (including assigned reading – see **Schedule** above) and to participate actively in lectures, discussions and exercises. As members of the academic community, all students are expected to contribute regardless of their proficiency with the subject matter.

Students are expected to make prior arrangements with Instructor if they know in advance that they will miss any class and to consult with the Instructor as soon as possible if they miss any class without prior notice. Any student who expects to miss more than one class session is strongly advised to drop the course and take it in a later semester when he/she can attend every class.

Departmental policy requires students to take exams at the scheduled time and place, unless there are truly compelling circumstances supported by appropriate documentation. Except in such circumstances, failure to attend a scheduled exam will result in a score of zero (0) for that exam, in accordance with [Mason policy on final exams](#). Students should not make travel plans or other discretionary arrangements that conflict with scheduled classes and/or exams. If the University is closed due to weather or other unforeseen conditions, final exams may be rescheduled – students are strongly advised not to make plans that would prevent them from attending exams that may be rescheduled during the entire [exam period](#).

Classroom conduct

Students are expected to conduct themselves in a manner that is conducive to learning, as directed by the Instructor. Any student who negatively impacts the opportunity for other students to learn will be warned – if disruptive behavior continues, the student will be asked to leave the classroom.

Electronic devices are potential distractions in the classroom environment. Cell phones, pagers and other handheld devices must be turned off or set to "silent" mode and not used while class is in session. Laptop computers and similar devices may be used only if such use is directly related to the classroom activity in progress – for some activities the Instructor may require that such devices not be used in order to maximize student engagement.

Communications

Registered students will be given access to a Blackboard section for this course. Blackboard will be used as the primary mechanism (outside of lectures) to disseminate course information, including announcements, lecture slides, homework and other assignments, and scores for homework and exams.

Communication with the Instructor on issues relating to the individual student should be conducted using Blackboard Mail, Mason email, via telephone, or in person - **not** in the public forums on Blackboard. Blackboard Mail is the preferred method – for urgent messages, you should also attempt to contact the Instructor via telephone. Federal privacy law and Mason policy require that any communication with a student related in any way to a student's status be conducted using secure Mason systems – if you use email to communicate with the Instructor you **MUST** send messages from your Mason email account.

Lecture slides are complements to the lecture process, not substitutes for it - access to lecture slides will be provided in Blackboard as a courtesy to students provided acceptable attendance is maintained.

All course materials (lecture slides, assignment specifications, *etc*) are published on Blackboard in Adobe® Portable Document Format (PDF). This allows users of most computing platforms to view and print these files. Microsoft® Word (or a compatible word processing application) is required for preparing assignments – it is available on computers in the Mason open labs.

Privacy

Instructors respect and protect the privacy of information related to individual students.

As described above, issues relating to an individual student will be discussed via email, telephone or in person. Instructors will not discuss issues relating to an individual student with other students (or anyone without a need to know) without prior permission of the student.

Homework, quizzes, mid-term exams and other assessable work will be returned to individual students directly by the Instructor (or by a faculty or staff member or a Teaching Assistant designated by the Instructor, or via another secure method). Under no circumstances will a student's graded work be returned to another student.

Instructors, staff, and Teaching Assistants will take care to protect the privacy of each student's scores and grades.

Disability Accommodations

[The Office of Disability Services \(ODS\)](#) works with disabled students to arrange for appropriate accommodations to ensure equal access to university services. Any student with a disability of any kind is strongly encouraged to register with ODS as soon as possible and take advantage of the services offered.

Accommodations for disabled students **must** be made in advance – ODS cannot assist students retroactively, and at least one week's notice is required for special accommodations related to exams. Any student who needs accommodation should contact the Instructor during the first week of the semester so the sufficient time is allowed to make arrangements.

Campus Notifications

Students are encouraged to subscribe to the [Mason Alert system](#) to receive notifications of campus emergencies and other situations that could affect class activities.

Each classroom has a poster explaining actions to be taken in different types of crisis. Further information on emergency procedures is available at <http://www.gmu.edu/service/cert>. In the event of an emergency, students are encouraged to dial 911.

Honor Code

All members of the Mason community are expected to uphold the principles of scholarly ethics. Similarly, graduating students are bound by the ethical requirements of the professional communities they join. The ethics requirements for some of the communities relevant to Applied IT graduates are available via the following links:

- [ACM Code of Ethics and Professional Conduct](#)
- [IEEE Code of Ethics](#)
- [EC-Council Code of Ethics](#)

On admission to Mason, students agree to comply with the requirements of the Mason [Honor System and Code](#)¹. The Honor Code will be strictly enforced in this course. Honor Code cases are heard by a panel consisting of students – students who meet the requirements are encouraged to nominate themselves to serve on the Honor Committee.

Any use of the words or ideas of another person(s), without explicit attribution that clearly identifies the material used and its source in an appropriate manner, is **plagiarism** and will not be tolerated. [Dean Griffiths](#) has mandated a "zero tolerance" policy for plagiarism within [The Volgenau School of Information Technology and Engineering](#). The Instructor reserves the right to use manual and/or automated means (including such services as [SafeAssign](#)) to detect plagiarism in any work submitted by students for this course, and to direct Teaching Assistants and/or other faculty and/or staff members to do likewise in support of this course.

For this course, the following requirements are specified:

- All assessable work is to be prepared by the individual student, unless the Instructor explicitly directs otherwise.
- All work must be newly created by the individual student for this course for this semester. Any usage of work developed for another course, or for this course in a prior semester, is strictly prohibited without prior approval from the Instructor.

Students may seek assistance with assigned work (and are encouraged to do so if they feel the need), **provided**:

- The directions for the assigned work do not prohibit such assistance.
- Such assistance is explicitly acknowledged in the submitted work, clearly identifying the person(s) giving assistance and the nature of the assistance given.

¹ Available at <http://catalog.gmu.edu/content.php?catoid=5&navoid=410#Honor>

- Any work to be submitted is prepared entirely and exclusively by the student submitting it. Students are expressly prohibited from sharing any assessable work for this course in any manner with other students (except students assigned as Teaching Assistants or Undergraduate Peer Mentors to this course and the student's section), unless all students involved have had their work graded and returned by the Instructor, or the Instructor has explicitly approved such sharing.

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