Common Syllabus  revised 1/22/2013

This syllabus contains information common to all sections of IT 223 for the Spring 2013 semester. Information specific to each section will be made available to registered students via the Blackboard course management system.

University Policies

The University Catalog is the central resource for university policies affecting student, faculty, and staff conduct in university affairs. Unless explicitly noted, any conflict between the policies in the University Catalog and the content of this document is unintentional. Please notify the author to resolve any such conflicts.

Scheduled Sections

<table>
<thead>
<tr>
<th>Section</th>
<th>Instructor</th>
<th>Campus</th>
<th>Day</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>Prof. Curts</td>
<td>Fairfax</td>
<td>Mondays</td>
<td>7:20–10:00 p.m.</td>
</tr>
<tr>
<td>002</td>
<td>Prof. Varghese</td>
<td>Fairfax</td>
<td>Thursdays</td>
<td>7:20–10:00 p.m.</td>
</tr>
<tr>
<td>003</td>
<td>Prof. Leary</td>
<td>Fairfax</td>
<td>Fridays</td>
<td>1:30–4:10 p.m.</td>
</tr>
<tr>
<td>004</td>
<td>Prof. Lyons</td>
<td>Prince William</td>
<td>Tuesdays</td>
<td>1:30–4:10 p.m.</td>
</tr>
<tr>
<td>005</td>
<td>Prof. Winston</td>
<td>Fairfax</td>
<td>Saturdays</td>
<td>10:30 a.m.–1:10 p.m.</td>
</tr>
<tr>
<td>DL2</td>
<td>Prof. Sniegowski</td>
<td>Online</td>
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</tbody>
</table>

Course Description

IT 223 - Information Security Fundamentals

Credits: 3

Introduces concept of information security. Discusses need for organizational policy to define required services such as confidentiality, authentication, integrity, nonrepudiation, access control, and availability, and mechanisms to implement those services. Covers different types of security including physical security, computer security, and network security; common threats to and
attacks against information systems, including accidental damage, identity theft, malicious software, and “spam”; and defensive measures

**Prerequisite(s):** IT 103 or equivalent; or permission of department. Prerequisite enforced by registration system.

**Notes:** Students cannot receive credit for both IT 221 and 223.

**Hours of Lecture or Seminar per week:** 3


**Prerequisites**

The prerequisite for this course is **IT 103** (or an approved equivalent course), or permission from the **Department of Applied Information Technology**. Unless a waiver is granted, a grade of "C" or better **must** be achieved in the prerequisite course **before** a student is qualified to take this course. The prerequisite course must be completed prior to, not concurrently with, this course.

Note: Departmental permission to waive the prerequisite requirement is rarely given, and only where a student can demonstrate mastery of the course material – this typically requires significant industry experience, a recognized certification, and passing a waiver exam.

This requirement will be **strictly enforced**. Any student who does not meet the prerequisite requirement will be dropped from the course at the start of the semester and the student will be responsible for any consequences of being dropped.

**Rationale**

Security has become a global concern, especially since the events of September 11, 2001. Information security is an important aspect of this issue: increasing reliance on automated systems, the ubiquity of the Internet and the lack of security mechanisms in current network infrastructures place personal and organizational information at risk. Issues of concern include direct attacks (via malicious software and "hacking"), indirect threats (*e.g.* denial of service attacks, system failures) and human issues (*e.g.* lack of standards, procedures, and user awareness). This course is intended to develop awareness and understanding of the issues, introduce students to currently available technologies, and examine typical applications of those technologies to real-world systems.

IT 223 is a Core Course in the Bachelor of Science in Applied Information Technology, and an Elective Course in the AIT Minor and the AIT Undergraduate Certificate.
Objectives

On successful completion of this course, students will be able to:

− Define information security (IS) and information assurance (IA), and explain their relevance to information systems and information technology.

− Describe security services needed for modern information systems.

− Describe common threats to and attacks against information systems.

− Explain the need for an organization to define an information security policy describing the services required to secure the organization's information assets, and for information security technologies adopted by the organization to be consistent with the policy requirements.

− Describe and give examples of modern information security technologies.

− Give examples of current applications of information security technologies.

References

Textbooks

There is one required textbook for this course:

<table>
<thead>
<tr>
<th>Elementary Information Security</th>
</tr>
</thead>
<tbody>
<tr>
<td>Richard E. Smith</td>
</tr>
<tr>
<td>© 2013; Jones &amp; Bartlett Learning</td>
</tr>
</tbody>
</table>

Publisher’s pricing (as of 1/16/2012):

- Paperback  $152.95
- Electronic varies by format

This textbook is available in several electronic formats at prices significantly lower than the paperback format. See the publisher’s Web site for more information.
Online references

The following online reference will be used extensively during this course:

| ![Information Assurance Technical Framework](https://www.iad.gov/library/iacf.cfm) | Information Assurance Technical Framework  
Information Assurance Solutions, Technical Directors  
© 2002; National Security Agency  
URL: [https://www.iad.gov/library/iacf.cfm](https://www.iad.gov/library/iacf.cfm)  
Under “ON THIS SITE”, “DOCUMENTS AND PRODUCTS”, click “• IACF Documents”.  
Please note: This is a very large document. It is **not** necessary to download and print the entire document – students will need to read only selected sections.  
Please note: The server at this site will present a certificate chain that your browser will most likely consider “untrusted” (because it does not recognize the DOD CA at the root of the chain). You may need to add an exception for this certificate chain in order to use the site with your browser. |

Faculty and Staff

Course Coordinator:  
**Michael X. Lyons**

Instructors:  
- **Section 001** Raymond J. Curts  
- **Section 002** Bobby Varghese  
- **Section 003** Margaret Leary  
- **Section 004** Michael X. Lyons  
- **Section 005** Thomas Winston  
- **Section DL2** Daun-Marie Sniegowski

Teaching Assistants:  
*To be assigned*

Administrative support:  
**Cindy Woodfork**  
Prince William campus  
*Bull Run Hall*, Suite 102  
Email: cwoodfo1@gmu.edu  
Phone: 703–993–8461
Grading

Grades will be awarded in accordance with the Mason Grading System for undergraduate students. See the University Catalog, Academic Policies, 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

* Grades of "C−" and "D" are considered passing grades for undergraduate courses. However, a minimum grade of "C" is required in the AIT major for any course that is a prerequisite for one or more other courses. This course is a prerequisite for several courses in AIT Concentrations – see http://catalog.gmu.edu/, select "Courses" from the left menu, then “Prefix: IT” from the drop-down menu and click "Filter" for more information.

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

Final grades will be determined based on the following components:

- In-class exercises  15%
- Homework         25%
- Mid-term exam    30%
- Final exam       30%

These components are outlined in the following sections.

In-class exercises

Exercises (including quizzes and other activities) will conducted in selected class sessions throughout the semester. Exercises will not be announced in advance. Any student who misses an exercise due to an unexcused absence will receive zero (0) for that exercise.

Note: Online sections do not meet in person and will not have in-class exercises. Other coursework will be assigned for those sections to determine this grade component.
Homework

Homework will be assigned several times during the semester. Each assignment will count towards the final grade - there are no "optional" assignments. Each homework assignment is to be prepared and submitted as specified by the Instructor.

Students are expected to submit work as scheduled by the Instructor. Any assignment submitted after the due date-time but within 24 hours of it will be graded with a penalty of 25% of the available credit. Any assignment submitted more than 24 hours late will not be graded.

Mid-term exam

The mid-term exam will be conducted during the scheduled class session in Week 6 and will be based on topics addressed in Lectures 1-5. 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 all mid-term exams for all sections have been graded.

Students in online sections are required to attend an exam session (to be scheduled) in person, or to arrange for a proctored exam.

Final exam

The final exam will be held during the scheduled final exam session (see http://registrar.gmu.edu/calendars/2013SpringExam.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.

Students in online sections are required to attend an exam session (to be scheduled) in person, or to arrange for a proctored exam.

Mid-term and 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 grades until the hold has been removed by the Registrar.
### Schedule

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Content</th>
<th>Reading*</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Smith</td>
</tr>
<tr>
<td>1</td>
<td>Introductions, Logistics, Overview</td>
<td>Ch. 1</td>
</tr>
<tr>
<td>2</td>
<td>Information security services part 1</td>
<td>Chs. 7, 9</td>
</tr>
<tr>
<td>3</td>
<td>Information security services part 2</td>
<td>Chs. 6, 8</td>
</tr>
<tr>
<td>4</td>
<td>Information security services part 3</td>
<td>Chs. 2-4</td>
</tr>
<tr>
<td>5</td>
<td>Information security services part 4</td>
<td><em>to be advised</em></td>
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<tr>
<td></td>
<td>Review for mid-term exam</td>
<td></td>
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<tr>
<td>6</td>
<td><strong>Mid-term exam</strong></td>
<td>Chs. 1, 17</td>
</tr>
<tr>
<td>7</td>
<td>Security engineering</td>
<td>Ch. 13</td>
</tr>
<tr>
<td>8</td>
<td>Risk management</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Security planning</td>
<td>Ch. 2</td>
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<td>10</td>
<td>Policy development</td>
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<tr>
<td>11</td>
<td>Hardware security</td>
<td>Ch. 13</td>
</tr>
<tr>
<td>12</td>
<td>Software security</td>
<td>Ch. 7</td>
</tr>
<tr>
<td>13</td>
<td>Network security</td>
<td>Chs. 10-12</td>
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<tr>
<td>14</td>
<td>Intrusion detection systems</td>
<td></td>
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<tr>
<td></td>
<td>Personnel security</td>
<td>Ch. 13</td>
</tr>
<tr>
<td>15</td>
<td>InfoSec program maintenance</td>
<td><em>to be advised</em></td>
</tr>
<tr>
<td>16</td>
<td>Review for final exam</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Final exam</strong></td>
<td></td>
</tr>
</tbody>
</table>

*See **References** above

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 Blackboard for the latest class schedule.*
Important Dates

Please see the Spring 2013 Semester Calendar for important dates, including the last days to add and drop courses.

Religious Holidays

A list of religious holidays is published by University Life. Any student whose religious observance conflicts with a scheduled course activity must contact the Instructor at least 1 week 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.

Mason policy requires students to take exams at the scheduled time and place, unless prior approval is granted by the Chair of the department and the Dean of the school. Failure to attend a scheduled exam will result in a score of zero (0) for that exam. Please note that exams may be re-scheduled by the Registrar to compensate for disruptions in the semester schedule and students are expected to be available throughout the 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 may 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 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 only should be conducted using Mason email, via telephone, or in person - not in the public "Discussions" forums on Blackboard. To protect student privacy any communication related in any way to a student's status must be conducted using secure Mason systems – if you use email to communicate with the Instructor you MUST send messages from your Mason email account. Students must activate and monitor their Mason email accounts to receive important information from the University, including messages related to this class.

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, closings, 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](http://www.gmu.edu/service/cert). In the event of an emergency, students are encouraged to dial 911.

**Other Resources**

Mason provides many useful resources for students. The following resources may be particularly useful:

- The Writing Center
- The Academic Advising Center
- The University Libraries
- Counseling and Psychological Services
- University Career Services

See [http://www.gmu.edu/resources/students/](http://www.gmu.edu/resources/students/) for a complete listing of Mason resources for students.

**Academic Integrity**

All members of the Mason community are expected to uphold the principles of scholarly ethics.

The AIT major has been designed to achieve several specific outcomes. One of those outcomes is: “An understanding of professional, ethical, legal, security, and social issues and responsibilities.”

Graduating students are bound by the ethical requirements of the professional communities they join. The ethics requirements for some of the communities relevant to AIT graduates are available via the following links:

- [ACM Code of Ethics and Professional Conduct](http://www.acm.org/about/code)
- [EC-Council Code of Ethics](http://www.ec-council.org/about/code-ethics)
On admission to Mason, students agree to comply with the requirements of the Mason Honor Code. The Honor Code will be strictly enforced in this course. Honor Code cases are heard by a panel 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 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.

- 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.

Another aspect of academic integrity is the free exchange of ideas. Vigorous discussion and debate are encouraged in this course, with the firm expectation that all aspects of the class will be conducted with civility and respect for differing ideas, perspectives, and traditions. Please see the Mason Diversity Statement.

Students are encouraged to ask for clarification of any issues related to academic integrity and to seek guidance from the Instructor, other faculty members or advisors, or the Office for Academic Integrity.