Prerequisites

Matriculation in the MS AIT program.

Description:

Presents various intelligence analysis methods addressing basic topics, including: hypothesis generation and testing, substance-blind analysis of evidence and its credentials, chain of custody analysis, combination of evidence, divide and conquer paradigm for analysis, sources of uncertainty, competing hypotheses and analyses. Discusses case studies in various domains following a hands-on approach using educational analysis tools. (This syllabus is subject to change based on pacing and class needs.)

Expected outcomes:

- Understanding computational and qualitative approaches to intelligence analysis.
- Understanding the role of evidence analysis, and applications to structured analytic techniques
- Understanding computational and qualitative methods for structured argumentation.
- Practical experience with case-studies in various areas of intelligence analysis.
- Practical experience with analysis tools, and structured analytic techniques

Key to Syllabus

Orange: In-class deliverable – will be briefings as well as participation in structured analytic techniques

Green – post online, or submit online or in-class
Part 1 – Heuer and the Psychology of Intelligence Analysis and Structured Analytic Techniques

Week 1

Module 1: Analysis of State based cyber actors – Some IR theory for good measure!

Readings:

The Use of Governance to Identify Cyber Threats Through Social Media

International Relations and Cyber Attacks: Official and Unofficial Discourse

Cyber Deterrence: Tougher in Theory than in Practice?

State, Power, Anarchism

Unrestricted warfare and Chinese military strategy.

Information Warfare: Time for a redefinition

Learning Objectives/goals: Consider the role of the state in the context of cyber and information security.

Deliverables: Introduce yourself – interests, work, career, hobbies, etc.

Week 2

Module 2: Analysis of non-state cyber actors - Theories on terrorism and the Internet

Readings:

Offensive Cyber Capability: Can it Reduce Cyberterrorism

On Cyber Warfare

Cyber Deterrence


Emerging Issues in Internet Regulation: The Unstable Role of Wikileaks and Cyber-Vigilantism

Mobilising Cyber Power

Asymmetric Cyber-warfare between Israel and Hezbollah: The Web as a new strategic battlefield
Learning Objectives/Goals: Comparative analysis of state and non-state threats in cyber space. Tee-up for critical thinking exercises.

Online Deliverable: Students will prepare brief 3-slide presentation on one of the articles – to be assigned on discussion board under “Briefs” tab. In week 3 students will present their articles.

Week 3

Module 3: Analysis 1. For Weeks 3-5 please use the following link:


Readings: Please read PsycPart 1 or chapters 1-3


A matrix based integrated framework for multi disciplinary exploration of cyber-international relations

Learning Objectives/Goals: Start with structuring analysis – How it differs from traditional academic research. Define problem, develop questions about problem, and discuss problem notions.

Online Deliverables: What does analysis mean to you? Submit in Discussion forum entitled “Analysis” a one paragraph analysis, and one page academic summary of article to demonstrate differences between types of writing. Due week 5.

Week 4

Module 4: Analysis 2.

Readings: Please read Part 2 or chapters 4-8


Learning Objectives/Goals: Thinking more about research questions, and how to develop assessments.

Week 5

Module 5: Analysis 3

Readings: Please read part 3 or chapters 9-14

A matrix based integrated framework for multi disciplinary exploration of cyber-international relations

Risk analysis and probabilistic survivability assessment (RAPSA): An assessment approach for power substation hardening

The use of attack trees in assessing vulnerabilities in SCADA systems

Tracing cyber attacks from the practical perspective

The holy grail of content-based media analysis

A Strategic Analysis of Information Sharing Among Cyber Attackers


Week 6

Module 6: Structured Analytic Techniques 1 (STAT)


Readings: pp. 1-14 – Diagnostic techniques

Learning Objectives/Goals: Understand and employ Key Assumptions Check; Quality of Information Check; Indicators of Signposts of change and ACH

Week 7

Module 7: STAT 2

Readings: pp. 15-24


Learning Objectives/Goals: Understand the differences between each topic: Devils Advocacy, Team A/Team B; High impact/ low probability analysis; What-if analysis.

Week 8

Module 8: Imaginative Thinking Techniques

Learning Objectives/Goals: Understand how to employ and facilitate STATs in an exercise…

Week 9 MIDTERM Examination

Part 2 The Science Behind Evidence, Hypotheses and Arguments in Intelligence Analysis (This section may be adjusted, depending on understanding of STATs, and Intelligence Writing Styles)

Week 10

o Chapter 1: Intelligence Analysis: “Connecting the Dots” (reading)
o Chapter 2: Marshaling Thoughts and Evidence for Imaginative Analysis (reading)
o Chapter 3: Disciple-CD: A Cognitive Assistant for Connecting the Dots (reading, video, exercise)
o Chapter 4: Evidence (reading, video exercise)
o DCD Exercise 1 (Disciple-CD) (5% of final grade) //Please await final determination on this assign.

Week 11:
o Chapter 5: Divide and Conquer: A Necessary Approach to Complex Analysis (reading, video, exercise)
o DCD Exercise 2 (Disciple-CD and Blackboard Wiki) (5% of final grade) //Please await final determination on this assign.

Week 12:
o Chapter 6: Assessing the Believability of Evidence (reading, video, exercise)
o Chapter 7: Chain of Custody (reading)
o Chapter 8: Recurrent Substance-Blind Combinations of Evidence (reading)

Week 13:
o Chapter 9: Major Sources of Uncertainty in Masses of Evidence (reading, video, exercise)
o Chapter 10: Assessing and Reporting Uncertainty: Some Alternative Methods (reading)

Week 14:
In-class exercise – STAT(s) to solve the fictitious analytic exercise. Briefing (30%) Submitted briefings (5%)
Grading

The grading scale for this course is:

<table>
<thead>
<tr>
<th>Percentage Range</th>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>93 – 100%</td>
<td>A</td>
<td>Passing</td>
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<tr>
<td>90 – 92%</td>
<td>A-</td>
<td>Passing</td>
</tr>
<tr>
<td>86 – 89%</td>
<td>B+</td>
<td>Passing</td>
</tr>
<tr>
<td>82 – 86%</td>
<td>B</td>
<td>Passing</td>
</tr>
<tr>
<td>79 – 82%</td>
<td>B-</td>
<td>Passing</td>
</tr>
<tr>
<td>76 – 79%</td>
<td>C+</td>
<td>Passing</td>
</tr>
<tr>
<td>70 – 76%</td>
<td>C</td>
<td>Passing</td>
</tr>
<tr>
<td>60 – 69%</td>
<td>D</td>
<td>Passing</td>
</tr>
<tr>
<td>0 – 59%</td>
<td>F</td>
<td>Failing</td>
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</tbody>
</table>

Textbooks


Other texts as linked above.

Final grades will be based on the following components:

- Assignments: 25%
- Mid-term exam: 35%
- Final exercise: 40%

A separate sheet explaining more about the deliverables will be assigned at the beginning of the class.

If a class is cancelled:

- The Provost may schedule a Make-Up Day, in which case the cancelled class will be held on that day, at the usual class time and in the usual classroom unless otherwise advised. Please note that the Make-Up Day may be on a different day of the week from the usual class day.
- If the Provost does not schedule a Make-Up Day the Instructor will schedule an *ad hoc* make-up session. The make-up session may be online – students will need Internet access.
Important Dates

Please see the Fall 2017 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 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.

Mason policy requires students to take exams at the scheduled time and place, unless prior approval is granted by the student's academic dean or director. 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 required to be available throughout the exam period including the scheduled Make-up Day.

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. Except for note-taking, all electronic devices must be in silent mode, and not used. During exams, all electronic devices must be turned off and out of hands, stowed in bags under desk or pockets. Usage of these devices for ANY reason during an exam or quiz is grounds for an HCV, and instructors can fail you or penalize you further for such usage.

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. Some announcements may be sent via Blackboard to students' Mason email accounts.
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.

Online sections will use several tools through the Blackboard course management system. Students are responsible for obtaining Internet access and a compatible platform. Appropriate computers are available on campus in 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 member, staff member, or 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**

Disability Services 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 Disability Services as soon as possible and take advantage of the services offered.

Accommodations for disabled students must be made in advance – Disability Services cannot assist students retroactively. Any student who needs accommodation should contact the Instructor no later than the first class.
**Campus Notifications**

Students are encouraged to subscribe to the [Mason Alert system](http://www.gmu.edu/resources/students/) 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 the [Campus Emergency Response Team](http://www.gmu.edu/resources/students/) Web site.

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

- [ACM Code of Ethics and Professional Conduct](http://www.gmu.edu/resources/students/)
- [IEEE Code of Ethics](http://www.gmu.edu/resources/students/)
- [EC-Council Code of Ethics](http://www.gmu.edu/resources/students/)

On admission to Mason, students agree to comply with the requirements of the Mason [Honor Code](http://www.gmu.edu/resources/students/). 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.
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.

**Instances of cheating whether perceived or real will result in actions to be determined by the instructor in accordance with University policies. This can include** –

1. An Honor Code Violation
2. A failure for the assignment in question
3. A failure for the course.

George Mason requires that instructors report all instances of perceived cheating to the Office of Academic Integrity.

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 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 for more information on this topic.

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