Conflict in Cyberspace
(PPPE / PSCI 6302)

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Class Room: FN 2.202 (TU) / FO 2.208 (TH)
Current Syllabus: Updated on Aug 22

Course Description

Cyberspace is not an isolated concept. It expands beyond the conventional notions of networks. Indeed, despite its technical specificities, cyberspace is a domain of human interactions. While many security issues organizations and individuals face are highly technical, their underlying causes and systematic effects are inherently behavioral. Therefore, it makes little sense to approach cybersecurity from a narrow, purely technical perspective. Yet many courses focus on 'the mechanics' of cybersecurity at the expense of behavioral and political aspects. In contrast, this class considers cyberspace as a synergistic entity. First, it examines conflicts and violence in the pre-digital age. Next, it discusses the origins, organization, and evolution of cyberspace. Finally, it explores how cyberspace reshapes conventional conflicts and produces new ones.

Learning Objectives

There are four learning objectives for this course:

- Gain a foundational understanding of what cyberspace is and how it functions. Cyberspace operates on multiple dimensions. Knowing its underlying fundamentals is crucial to understand how states and non-state and individual actors use digital technologies to their benefit.

- Learn to analyze the complexities and challenges of cyberspace with a combination of behavioral and technical perspectives. Appraising multiple aspects in an ensemble helps a professional gain essential insights and develop brand-new solutions for cybersecurity problems.

- Learn multiple languages of cybersecurity. Technical, policy and scholarly communities use different frameworks and methods when discussing cyberspace. The absence of a "common language" disconnects these communities from each other and hinders productive cooperation. As a result, both the public and private sectors exhibit high demand for specialists who can speak multiple cybersecurity languages and communicate the results of their work to different audiences.

- Learn to work with data (in R). This course is an excellent opportunity to develop some basic coding skills (if you have not already) at a gentle pace. While Python is widely used by cybersecurity developers [and is taught in other classes of this program], R is the most common programming language among policy and academic communities. As a result, the job market immensely values professionals who can code in both languages.

These learning objectives will be assessed through class discussion, individual and group assignments and presentations.

Course Modality and Expectations

Instructional Mode

The class will meet in person at the scheduled time.

Communication with Instructor and TA

Students should use their UTD email account to contact the instructor or TA. Emails from non-UTD accounts will be disregarded.

Student emails will be answered within 3 working days under normal circumstances. Students **should not use MS Teams to contact the instructor or TA.** MS Teams messages will be ignored. However, in case of an urgent issue, the instructor or TA can try to approach a student via MS Teams (e.g., no homework submission, presentation slides request, etc.).

Before you contact the instructor or TA, you need to check the class homepage's updates in the "Announcements" section. Please, make sure your question was not already addressed. Emails with questions that have been previously addressed will receive a low-priority status with no guaranteed 3-day response.

UTD TAs do not have office phones. Please, do not ask TA to share her/his personal phone with you.

Office Hours

A student is required to book a slot to attend the office hours. A slot must be reserved at least 24 hours in advance. You can attend the office hours remotely (via MS Teams). In this case, a student must put a note ('TEAMS') after her FIRST name in the reservation form. Students use anton-sobolev.youcanbook.me and https://rahul-thakar.youcanbook.me/ to book their slot with the instructor or the TA, respectively.

Updates

Keep checking the class website regularly. Please remember that this is a new course, so I reserve the right to make mid-course corrections. I also welcome feedback.

Prerequisites

In addition to a confident level of computer and Internet literacy, certain minimum technical requirements must be met to enable a successful learning experience. Please review the important technical requirements on the Getting Started with eLearning webpage.

The course does not require prior programming skills.

Course Requirements

You are expected to attend every class and to be prepared to discuss all the assigned readings. If you find you cannot attend, please notify your instructor in advance.

Course Access and Materials

This course can be accessed using your UT Dallas NetID account on the eLearning website.

Due to the dynamic nature of our subject matter, no single book exists that meets all course requirements. Readings for each class are listed in the course schedule. All required readings are available via the class website or UTD library.

Recommended Readings

- Van Puyvelde, Damien & Aaron Brantly (2019) *Cybersecurity: politics, governance, and conflict in cyberspace.* John Wiley & Sons.

- Cornish, Paul (2021) *The Oxford Handbook of Cyber Security.* Oxford University Press.

- Jon DiMaggio (2022) *The Art of Cyberwarfare: An Investigator's Guide to Espionage, Ransomware, and Organized Cybercrime.* No Starch Press.

- Bueno de Mesquita, Bruce & Anthony Fowler (2021) *Thinking clearly with data: A guide to quantitative reasoning and analysis.* Princeton University Press.

- Kahneman, Daniel (2011) *Thinking, fast and slow.* Macmillan Press.

Course Assignments and Evaluation

Your grade has the following components: individual activities, group activities, and group projects. The breakdown of each component of your overall grade is as follows:

Component	%
Individual Activities	
Attendance	10
Participation	20
Problem Sets	21
Quizzes	21
Group Activities	
Discussion Lead	10
Paper Presentation	10
Peer Assessments	20
Group Projects	
Mid-term Presentation	10
Final Presentation	10
Total	*132*

Individual Activities (72% *total*)

Attendance and Participation (10% + 20%)

You are expected to attend each class and be prepared to discuss all the assigned readings. Participation will consist of regularly contributing to class discussions, drawing from readings, and integrating lessons from earlier meetings. We use desk name cards to check attendance. The instructor provides cards. Students must take the desk name card at the start of each class. Students who fail to take their card will get 0 credits for the current week's attendance and participation.

Problem Sets (21%)

Working on actual problems is central to learning. There will be 7 mandatory problem sets (in R). These assignments will consist of R-coding exercises on descriptive inference and data processing and visualization. Late submissions will not be accepted without prior permission. Students are encouraged to discuss the problems together but must independently produce and submit solutions.

No prior knowledge of R is required. Students will acquire the necessary skills during the first part of this course.

Pre-class or In-Class Quizzes (21%)

Open book quizzes will be administered via the course website before or at the beginning of (almost) each class. These are designed to ensure students arrive to class prepared to engage in discussion and team activities based on the assigned reading. Students should complete these assessments themselves with no assistance from their colleagues. Students may not discuss them with others. Each quiz is thirty minutes long and consists of up to seven multiple-choice questions. You must complete them in one sitting after doing the reading as they may not be paused or retaken, and they will automatically be submitted when the time limit expires.

Group Activities (40% *total*)

Discussion Lead (10%)

Students will be assigned to groups. Each group will lead the discussion on required readings twice. Guidelines for the second discussion will be provided. The schedule of discussions is posted under Course Schedule.

Discussion Lead (10%)

Each group will give two presentations on recommended readings twice. Guidelines for the second presentation will be provided. The schedule of presentations under posted under Course Schedule.

Note: No more than two moderators are allowed to lead the discussion session or present the paper. At the end of the presentation discussion_lead groups need to specify the contribution of each group member. If a student did not contribute into a group activity she/he receives 0 for this specific activity.

Peer Assessments *(20%)*

To help ensure that all members of the team are actively contributing, you will be asked to evaluate your teammates' contributions, effort, and performance **after each group activity** via a peer evaluation form. Students will receive anonymous evaluations from your group. It will help you know how well you are doing and identify areas in need of improvement. Students will also complete a self-evaluation of her/his own performance. It will help you reflect on your own effort in this class. Your highest and lowest peer-evaluation scores will be dropped.

Group Projects (*20% total*)

Mid-term Presentation *(10%)*

In Week 7, groups will present a report devoted to a major state (or interstate) actor in cyberspace. The report should address the following questions. How is a nation's technical governance of cyberspace is organized? What laws and norms regulate the nation's cyberspace? What is the nation's cybersecurity strategy? What are the main threats declared in the nation's cybersecurity strategy? What evidence was used to determine these threats and their relative danger? Do you find it credible? Propose an alternative approach to measure the relative danger of the nation's cybersecurity threats. Does your approach bring the same list of threats? What changes in technical governance, law regulation, and national cyberstrategy should be implemented to mitigate these threats? Could you outline potential reasons for these changes not being implemented yet [e.g., technical difficulties, sabotage, narrow-interest groups, public opinion]?

The audience will provide feedback. Groups will be able to update their report before the final submission.

Final Presentation *(10%)*

Groups will conduct and present a final project. Latter includes anything that may be described as a research product: a technical report, a think-tank policy piece, a journalist investigation, an academic article, or a novel dataset. Be creative. This class has many students from diverse backgrounds who wish to achieve different goals. Select a research product that best fits your objectives.

Grading Scale

Grade	Score	Grade	Score
A	>= 112	C	>= 73
A-	>= 105	C-	>= 66
B+	>= 99	D+	>= 59
B	>= 92	D	>= 52
B-	>= 85	D-	>= 46
C+	>= 79	F	<= 44

A Note on Academic Integrity

Please visit the university's Community Standards and Conduct website on using sources and revisit the university's Academic Integrity Policy. The University takes plagiarism infractions seriously, and penalties for students caught plagiarizing include suspension, lowered or failing

grades, and possible expulsion. In general, if you have any questions, please feel free to ask your instructor.

Diversity and Inclusion

This course should serve the needs of students from all backgrounds and perspectives. Students with disabilities enrolled in this course who may need disability-related classroom accommodations are encouraged to make an appointment to see the instructor before the end of the second week of the quarter. All conversations will remain confidential. Please also arrange to have the required documentation sent to anton.sobolev@utdallas.edu for any accommodations at your earliest convenience.

Disabilities Policy

Please find disability policy here: https://go.utdallas.edu/syllabus-policies Students with disabilities enrolled in this course who may need disability-related classroom accommodations are encouraged to make an appointment to see Anton Sobolev before the end of the second week of semester. Please also arrange to have the required documentation sent to Anton Sobolev for any accommodations *as soon as possible*.

Resourses for student success

UTD has a constellation of resources aimed at helping students. Please find them here: https://go.utdallas.edu/academic-support-resources

Technology in the Classroom

No smart phones may be used in class. Class discussions may not be recorded.

You will frequently make use of computers in this course during lecture periods and discussion sections. Please be respectful to your instructor and your peers by using your computers only for class-related purposes. Please put your phone away before class starts and don't bring it out.

Development of the Course

Learning should not happen in a vacuum. To help ensure the best chance for success for the students of this course, this course draws on the format, syllabus, and materials from similar successful courses at peer institutions.

Academic Calendar

Module 1. Background: History, Frameworks, and Tools

W01, 08/21 - 08/25: Class Logistics and Introduction

No required readings

W02, 08/28 - 09/01: In the beginning - 1: Understanding Conflict

Before the class

DataCamp Assignment 1 due | DataCamp Assignment 2 due

In class

1. Coding Quiz 1 | Reading Quiz 1

2. Workshop to install required software (TA)

Required:

- Bueno de Mesquita & Fowler, Ch.1, *Thinking Clearly in a Data-Driven Age*

- King et al, Ch.1, *The Science in Social Science*

Recommended:

- King et al, Ch.2, *Descriptive Inference*

W03, 09/04 - 09/08: In the beginning - 2: A brief history of communications

Before the class

DataCamp Assignment 3 due

Required:

- Olson (2000) Ch.1, *The Logic of Power*

- Volkov (2002) Ch.6, *The Politics of State Formation*

- North et al (2009), Ch.2, *Violence and Social Orders*

Recommended:

- Fearon (1995) *Rationalist Explanations for War*

W04, 09/11 - 09/15: In the begining - 3: Technology steps in

TBD

Module 2. Cyberspace: The Current Scene

W05, 09/18 - 09/22: How to work with conflict-related data: Workshop

TBD

Hands-on Workshop on working with data in R will take place during the second half of the class. Bring your laptops with R, Rstudio, and required packages pre-installed.

W06, 09/25 - 09/29: Cyberspace: Governing and capabilities

TBD

W07, 10/02 - 10/06: Midterm Conference Preparation

TBD

W08, 10/09 - 10/13: Political map of cyberspace: Mini-conference

Mid-term presentations due

TBD

Module 3. Cyber Conflicts: Selected Topics

Required readings: TBD

W09, 10/16 - 10/20: Traditional conflicts - 1: How cyberspace reshapes military operations

Required readings: TBD

W10, 10/23 - 10/27: Traditional conflicts - 2: How cyberspace changes civil resistance

Required readings: TBD

W11, 10/30 - 11/03: New Conflicts: Internet censorship & Content Moderation

Required readings: TBD

Module 4. Cyber Aspects of Conflict: Case-Studies

W12, 11/06 - 11/10: Domestic conflicts from Arab Spring to nowdays

Required readings: TBD

W13, 11/13 - 11/17: Interstate conflicts: Russia-Ukraine war

Required readings: TBD

W14, 11/20 - 11/24: Fall Break: No Classes

W15, 11/27 - 12/01: Group Presentations - 1

W16, 12/04 - 12/08: Group Presentations - 2

Communication

This course utilizes online tools for interaction and communication. Some external communication tools such as regular email and a web conferencing tool may also be used during the semester. For more details, please visit the Student eLearning Tutorials webpage for video demonstrations on eLearning tools.

Class Materials

The Instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course, however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Importance of Class Participation

Regular class participation is expected. Students who fail to participate in class regularly are inviting scholastic difficulty. A portion of the grade for this course is directly tied to your participation in this class. It also includes engaging in group or other activities during class that solicit your feedback on homework assignments, readings, or materials covered in the lectures (and/or labs). Class participation is documented by faculty. Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Class Recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student AccessAbility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

The instructor may record meetings of this course. These recordings will be made available to all students registered for this class if the intent is to supplement the classroom experience. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same: *"As a Comet, I pledge honesty, integrity, and service in all that I do."*

Academic Support Resources

The information contained in the following link lists the University's academic support resources for all students. Please go to Academic Support Resources webpage for these policies.

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus. Please review the catalog sections regarding the credit/no credit or pass/fail grading option and withdrawal from class.

Please go to UT Dallas Syllabus Policies webpage for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the instructor.

Student emails and discussion board messages will be answered within 3 working days under normal circumstances.

Students should not use MS Teams to contact the instructor. Please, use regular email instead.