

Syllabus
SPACE/AEROSP 581:
Space Policy and Management
Fall 2023 (3 Credits)

An Introduction to Space Policy and Management for Future Space Professionals

Course Description:

This is a graduate course focusing on the policy environment and management considerations for the space industry. The first part of the course will provide detailed information on how space policy is developed in the United States and the international space community, and how these policies result in specific missions and decisions. The second part will provide detailed information on modern management techniques and processes. Policy professionals and project managers from government and industry will guest lecture on the specific policy considerations, management techniques, and current issues in the field.

By the completion of this course, students will:

- have basic understanding of policymaking and its application to space;
- familiarity with the legal, political, and economic perspectives of certain space activities;
- recognize the relationships between government, international, academic, and commercial stakeholders;
- identify and analyze a range of policy solutions; and
- write appropriate policy recommendations to senior government decisionmakers.

Course Prerequisites:

None (Graduate Standing)

Instructors:

Dr. Mike Liemohn, Professor, Department of Climate and Space Sciences and Engineering
Room 1436, Climate and Space Research Building (on North Campus, 2455 Hayward St.)
Email: liemohn@umich.edu

Charles Powell, PhD Candidate, Department of Climate and Space Sciences and Engineering
Room 2520, Climate and Space Research Building (on North Campus, 2455 Hayward St.)
Email: cepowell@umich.edu

Graduate Student Instructor:

Anushree Manwaktar, CLASP MEng student
Email: anushre@umich.edu

Class Sessions:

Monday, Wednesday, and Friday, 12:30 – 1:20 pm, Beyster Building room 1670.

Remote/Hybrid Class:

Lecture Capture is set up and we will post the videos after each class session. ***In-person attendance is required and is a significant part of your grade.*** Because of the large number of students and the intent to facilitate interactive discussion, there is no option for remote class participation.

Attendance Policy:

Attendance is required and contributes to a significant portion of your grade. However, we understand that it's sometimes impossible to come to class due to illness, family emergency, job interviews, or some other reason.

Every class will feature an interactive component, such as a poll, quiz, or free-form response. Attendance data will be pulled from participants in these activities immediately after class and uploaded to Canvas.

You can miss up to FOUR (4) classes (for whatever reason, no questions asked) without it impacting your grade. We believe this is flexible and fair, and do not want to be in the business of managing which absences are excused and which are not (the exceptions are outlined in this syllabus). Please do not email us concerning attendance unless:

- A) Your situation is such that you will likely miss more than four classes; or
- B) We have incorrectly marked your attendance; or
- C) Your absences are covered in the exemptions outlined below.

If you are sick:

Please do not come to class sick. We expect you to use your allowable absences judiciously to account for these instances. If you are sick and have already used all of your excused absences, or are likely to use them over the course of your illness, please contact the course instructors.

Religious or School-Function-Related Absences:

If students expect to miss classes as a consequence of their religious observance or are traveling with a U-M sports team or organization, then alternate arrangements will be made to accommodate missed academic work. It is the obligation of students to provide the instructor with reasonable notice of the dates on which they will be absent (*before* they occur). We will determine a mutually agreeable alternative timeline within the boundaries of the class (usually a shifted deadline).

Somewhat Flipped Class Structure:

You will have readings for each unit. We will have structured Q/A time about each topic, and every class will feature some interactive component designed to elicit discussion opportunities. You will determine a large component of the course sequence because we will poll you on space

policy topics you wish to cover.

Office Hours:

Mike's Office Hours

Fridays, 10AM - 11AM, CSRB 1436 (Mike's Office)

Charlie's and Anushree's Office Hours

TBD, but could be set to Wednesdays, 4:30-5:30PM, CSRB 2422 (Donahue Room)

Course Slack:

This course will provide several avenues for communication and collaboration, including a class Slack workspace. You can join the workspace here using your UMich email: <https://um-fa23-space581.slack.com/>. We'll use this to solicit class discussion and Q/A during guest lectures.

iClicker:

This course will utilize iClicker for part of the interactive component. You should come to class with a wireless device such as a phone or laptop. If you do not have access to these, please contact the instructors at the beginning of class. To participate in iClicker polls, you can either use an iOS or Android app, or a web browser. Sign in to the class via <https://join.iclicker.com/FSAJ> using your university email.

Textbook:

There is no textbook, but there are a number of readings that will be assigned. Readings feature two categories: mandatory (you need to read this by the class) and optional (reading this will provide significant context, expertise, or consideration for the topic, but is not required for the course credit).

Other Useful Books:

These books will, without question, enhance your understanding of the political and historical environments for the space industry. They are not required for this class, but reading them would be beneficial to your career in this business. All are available through U-M libraries in digital format.

1. Beattie, Donald A. (2001). *Taking Science to the Moon : Lunar Experiments and the Apollo Program*. Johns Hopkins University Press.
2. Borowitz, Mariel (2017). *Open Space: The Global Effort for Open Access to Environmental Satellite Data*. Cambridge: MIT Press, doi:10.7551/mitpress/10659.001.0001.
3. Bowen, Bleddyn E. (2023). *Original Sin: Power, Technology and War in Outer Space*. Oxford: Oxford University Press, doi:10.1093/oso/9780197677315.001.0001.
4. McDougall, Walter A. (1985). *The Heavens and the Earth : A Political History of the Space Age*. Basic Books.

5. Siddiqi, Asif A. (2000). *Challenge to Apollo : The Soviet Union and the Space Race, 1945-1974*. National Aeronautics and Space Administration, NASA History Division.

Grading Apportionment:

Participation:	40%	
Policy Memo 1:	20%	(including re-writes, peer grading)
Policy Memo 2:	20%	(including re-writes, peer grading)
Management Plan:	20%	(end of the term, no re-writes or peer-grading)

Participation Grade:

The participation grade will be based on class attendance. Every class will feature some interactive component which will be used as the basis for attendance. Full credit will be given for students who have four (4) or fewer absences. On the fifth and for each following missed class, you will incur a 2.5% penalty per absence towards your final overall average. This penalty plateaus after 20 total absences, for a total penalty of 40%.

Because attendance and participation is a graded component, any deliberate attempt to circumvent or deceive our attendance procedures will be considered an Honor Code violation.

Student Collaboration Policy:

For written assignments, we encourage collaboration and peer tutoring, as is expected in a typical workplace. Please help each other learn the material and get through the work. Periodically, you will be expected to review your peers formally. You are encouraged to incorporate both peer feedback and insights derived from your own reviews into your revised products. You will be required to track and list all reviewers to any work product you submit. You will also be required to provide all versions (original submission, any subsequent edits or comments) of deliverables upon final submission. Depending on the circumstance, you may be allowed to use interactive/generative AI/ML/LLM prompts (such as ChatGPT) to produce work product, but only under specific conditions as permitted by the instructions in which you maintain a log of all inputs and outputs to the text generation engine. You are personally responsible for ensuring that every artifact you turn in clearly represents authorship. You may not claim others’ work as your own, including direct quotes, gists, and ideas.

Failure to abide by the conditions in this policy is taken as an Honor Code violation, and will be reported to the Dean's office. If you have any questions about this policy, please do not hesitate to contact me.

Grading Breakdown:

This class will not be curved. The grades will be assigned as follows:

A+	97%	B	83%	C-	70%
A	93%	B-	80%	D+	67%
A-	90%	C+	77%	D	63%
B+	87%	C	73%	D-	60%

Normal rounding will apply, so a 96.50 is an A+ and a 96.49 is an A.

Accessibility Requests:

If you think you may need an accommodation for this class, then please contact the Services for Students with Disabilities (SSD) office (<https://ssd.umich.edu/>) to be issued a Verified Individual Services Accommodation (VISA) form, which should be given to Mike (done electronically now). We will fully accommodate all such requests.

Late Policy:

Assignments are expected to be **submitted by 11:59 pm** on the listed due date.

Because we will be peer reviewing, any late submission may impact our ability to assign reviewers. **If we do not have your submission in time for peer review assignments, this component will not be graded.**

For due dates other than peer-review or questionnaire deadlines, **late assignments are automatically reduced by 20% per 24 hour period.** There is no grace period.

Except for very rare cases, excused late submissions **must** be requested *before* the due date and time. We are still in a pandemic; we will be generous with extensions, but note that your peer review activities are not extendable.

Extra Credit:

There will be one opportunity for optional extra credit near the end of the course: turning in the receipt acknowledging that you filled out the course evaluation. If you upload a screen shot/pic/PDF of the page showing that you submitted it, then you will receive **2%** extra towards your overall course grade. This will not be reflected in Canvas but will be added afterwards.

I highly value your feedback about the course and look forward to reading your comments on what went well and what could be done differently. I strive to improve my teaching skills every term.

Student Mental Health and Wellbeing

If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, then services are available. The first option is talking to a trusted friend or relative. You can also come to us. Our instructional team has an open-door policy. Mike is CLaSP's Rackham Diversity Ally and is ready and willing to listen to your story.

For professional help, please contact Counseling and Psychological Services (CAPS) at 734-764-8312 or online at <https://caps.umich.edu>. You may also consult University Health Service (UHS) at 734-764-8320 and at <https://www.uhs.umich.edu/mentalhealthsvcs>, or for alcohol or drug concerns, see www.uhs.umich.edu/aodresources. For a listing of other mental health resources available on and off campus, visit <http://umich.edu/~mhealth/>. We are *still* in a pandemic and will be dealing with its repercussions for a long time; please take care of yourself.

Student Sexual Misconduct Policy

Title IX prohibits discrimination on the basis of sex, which includes sexual misconduct – including harassment, domestic and dating violence, sexual assault, and stalking. Sexual violence can undermine students' academic success and we encourage anyone dealing with sexual misconduct to talk to someone about their experience, so that they can get the support they need. Confidential support and academic advocacy can be found with the Sexual Assault Prevention and Awareness Center (SAPAC) on their 24-hour crisis line 734-936-3333 and at <https://sapac.umich.edu>. Alleged violations can be reported to the Office for Institutional Equity (OIE) at insitutional.equity@umich.edu