

Law 279.9, sec. 001 – Space Law Spring, 2020

Instructor Information

Instructor: Brian R. Israel
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Office Hours:

Friday, January 24:

- 1:00-2:00 (Café Zeb)
- 2:00-3:00 (Café Strada)

Saturday, January 25:

- 1:00-2:00 (Café Strada)

Course Information

Meetings: Thursday, January 23

- 6:25 PM – 9:25 PM (with 20 minute break)

Friday, January 24

- 10:00 AM – 12:00 PM (with 10 minute break)
- 3:10 PM – 5:10 PM (with 10 minute break)

Saturday, January 25

- 9:00 AM – 12:00 PM (with 20 minute break)
- 2:00 PM – 5:00 PM (with 20 minute break)

Location: Boalt 170

Prerequisites or Co-requisites: N/A

Credit Hours: 1

Course Materials

All assigned readings are linked from this syllabus. Reading assignments are specified in the class schedule table that follows. In addition to learning outcomes, each reading assignment includes notes about what I hope you'll take from it, and food for thought as you read.

In general, I have assigned primary sources to introduce you to the various sources of space law. Please pay attention to **read** and **skim** instructions, as some assignments span only a few paragraphs. I have given you the complete documents both for context, in case you're curious, and because many of these documents will serve as useful references for future studies or practice. For each document, the assignment isolates the portions that will be the basis for discussions in class.

As you work your way through the assigned readings, please keep in mind the learning outcomes explained below. I have not assigned this breadth of treaties, legislation, and regulations for you to commit their provisions to memory. Instead, the assigned readings are intended to give you a more

general sense of what space law governs, how it is made, and how it might evolve. Whereas my overall objective for this 1 credit seminar is for you to gain a framework for thinking through any space law issue that comes your way, that will largely come from our class discussions and simulations, and the assigned readings are intended merely to prepare you to get the most from class.

Following the class schedule and assigned readings, I have recommended some **Optional Reading**, along with brief explanations of what you might gain from each. These are my recommendations for students wishing to delve more deeply into various dimensions of space law. I will present much of this material in class, but will not expect students to have read it.

bCourses TBD

Course Description

This course explores the international and national laws governing outer space. It begins with a brief look back over the first half-century of spaceflight, and the global, intergovernmental lawmaking process that produced the international legal framework for space, as a lens for analyzing the legal dimensions of contemporary and future space activities, the primary focus of the course. As space activities are increasingly conducted by private entities, space lawmaking is shifting to national legislatures and regulatory agencies extending treaty obligations to non-governmental actors, and regulating for other public policy ends. The course will introduce students to the U.S. regulatory frameworks for launch and reentry of spacecraft, satellite communications, Earth imaging, and ongoing legislative efforts to address next-generation commercial space activities. The course will conclude with a look at governmental and commercial plans for the second half-century of spaceflight - including harvesting the resources of celestial bodies and human settlements in space - and opportunities for students to play a role in this future, whether in government, a private space company, or a VC fund.

Methodology & Learning Outcomes

You are taking this seminar at the midpoint of the first century of space law. As I prepare this syllabus, it has been sixty-two years since Sputnik, the first man-made satellite orbited the Earth, and fifty-two years since the Outer Space Treaty entered into force. Relative to our experience with other domains of human activity—land, sea, air—and informed ambitions to explore and develop space, we are in the early days. Over the course of your legal careers, there will be ample opportunities to shape the future of space exploration and commerce, in both public and private practice. These opportunities will be difficult to predict with any precision today; they may well arise at a company that doesn't yet exist.

My overarching objective for this course is to impart a framework for analyzing any legal issue relating to space that comes your way. To do so I will put a premium on foundational principles and concepts above specific provisions of law as they exist today. The course likewise prioritizes breadth over depth, to impart as near a complete picture of space law as possible in a 1 credit seminar, and to introduce other bodies of law in which you might begin to build your expertise if you aspire to practice space law.

By the conclusion of this seminar, you should:

1. Have developed a functional knowledge of the international legal framework for outer space.
 - a. Be able to interpret the Outer Space Treaty and its progeny and apply their provisions to past, present and future factual scenarios.
 - b. Be aware of major controversies in the interpretation and application of these treaties.
 - c. Understand how space law fits into the international regime for outer space.
2. Understand the legal and physical characteristics of the space domain that distinguish it from other domains of human activity.

3. Be able to conceptualize the practical problems space law aims to solve.
4. Be able to predict how space law might develop to address contemporary and future challenges.
5. Assess the tradeoffs between a prescriptive approach to new technologies and capabilities (e.g, prescribing regulations in advance, code-like detail) versus more flexible, reactive approaches.
6. Situate the present state of space law and its controversies in historical context.
7. Understand how space law is made (processes, actors).
8. Be aware that outer space is used for national security and military purposes, and that the corpus of international law, including the Law of Armed Conflict, applies to outer space.
9. Understand how the United States implements its obligations under Article VI of the Outer Space Treaty.
10. Be able to critically evaluate proposed legislation to implement Article VI.
11. Acquire [simulated] space law practice experience! (*see* Simulations, below).
12. Be familiar with how space law is practiced in a range of public and private contexts.

More generally, students in the course will be expected to achieve the following Berkeley Law Learning Outcomes:

- (a) Knowledge and understanding of substantive and procedural law;
- (b) Legal analysis and reasoning, legal research, problem-solving, and written and oral communication in the legal context; and
- (c) Using the law to solve real-world problems and to create a more just society.

Simulations

To achieve the above learning outcomes, students will engage in 4 in-class simulations in which they will apply law to realistic factual scenarios, wrestle with some of the most difficult questions of space law, and practice the advocacy and advisory skills routinely exercised by space lawyers in public and private practice. Students will divide into groups and assume opposing roles in each scenario, followed by a whole-class debrief of each simulation.

Papers

Students will be evaluated by short (8-10 page) papers. Students will select their paper topics from a list of paper prompts that will be circulated to students and posted in bCourses prior to the first class meeting. **Papers are due February 28, 2020.**

Grading/Evaluation

As a 1-unit seminar, this course will be graded credit/no credit based on a single paper. Please note that as this course will meet only six times, **failure by any student to attend one or more sessions will result in the student being dropped from the course and receiving no credit.**

School-wide Policies

1) A “credit hour” at Berkeley Law is an amount of work that reasonably approximates three to four hours of work per week for 15 weeks, including a) classroom time, b) time spent preparing for class, c) time spent studying for, and taking, final exams, d) time spent researching, writing, and revising papers and other written work, and e) time spent preparing for and completing any other final project, presentation, or performance. For the purposes of these calculations, 50 minutes of classroom instruction counts as one hour, and the 15 weeks includes the exam period. You can expect to spend this amount of time per unit per week on in-class and out-of-class, course-related work as described above.

2) Students who need classroom accommodations or want to discuss implementation of their accommodations in this class are advised to contact Kyle Valenti, Director of Student Services (kvalenti@law.berkeley.edu) as soon as possible.

Student Services schedules all exams, including accommodated exams, as the law school is committed to anonymous grading. PROFESSORS DO NOT HAVE THE AUTHORITY TO RESCHEDULE EXAMS. Any student who seeks an accommodated or rescheduled exam for documented medical reasons or for religious observance should contact Student Services in 280 Simon Hall, 510-643-2744, kvalenti@law.berkeley.edu

3) The Academic Honor Code [[Academic Honor Code](#)] governs the conduct of all students during examinations and in all other academic and pre-professional activities at Berkeley Law.

4) If you are in need of economic, food, or housing support, you can find help at basicneeds.berkeley.edu. You may be eligible for money to buy groceries via calfresh.berkeley.edu or our [Food Assistance Program](#). If you are in need of food immediately, please visit our UC Berkeley Food Pantry at pantry.berkeley.edu

Course Policies

Please note that attendance is mandatory. As this course will meet only six times, **failure by any student to attend one or more sessions will result in the student being dropped from the course and receiving no credit**, in accordance with Law School policy. **Please be sure to sign in on the sheet at the front of the classroom before the start of every class meeting.**

Course Schedule and Reading Assignments

Class Date	Topic	Reading Assignment	Relevant Learning Outcome
January 23	The International Legal Framework for Outer Space. Including: <ul style="list-style-type: none"> • Jurisdiction • Responsibility • Liability • Ownership 	GA Res. 1721 (XVI) of 20 December 1961: International Cooperation in the Peaceful Uses of Outer Space <i>Read International Space Law: United Nations Instruments (hereafter “UN Instruments”) pp. 71-72</i>	<ul style="list-style-type: none"> • Functional knowledge of the international legal framework for outer space • Understand how space law is made (processes, actors)
		Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space UN Instruments pp. 45-47	<ul style="list-style-type: none"> • Functional knowledge of the international legal framework for outer space. • Understand how space law is made (processes, actors)
		Outer Space Treaty UN Instruments pp. 3-9	<ul style="list-style-type: none"> • Functional knowledge of the international legal framework for outer space. <p>--</p> <p>The Outer Space Treaty (OST) is the most important legal text you'll read for this course. The subsequent UN space treaties</p>

			<p>largely elaborate its foundational principles.</p> <p>As you read the provisions on amendment, consider the difficulty of marshalling a sufficient majority of the Treaty's more than 100 States Parties. In <i>Treaty Stasis</i>, you will read your instructor's view that the difficulty of altering the Treaty's terms places it in a <i>de facto</i> constitutional role within the international regime for outer space.</p>
		<p>Rescue and Return Agreement UN Instruments pp. 10-12 <i>Read</i> Arts. 1-6</p>	<ul style="list-style-type: none"> • Functional knowledge of the international legal framework for outer space.
		<p>Liability Convention UN Instruments pp 14-20 <i>Read</i> Arts I to XXI</p>	<ul style="list-style-type: none"> • Functional knowledge of the international legal framework for outer space. <p>---</p> <p>Pause to ponder the definition of "launching State." We will unpack and apply the launching State definition through an in-class simulation.</p>
		<p>Registration Convention UN Instruments pp. 24-27 <i>Read</i> Arts. I to VI</p>	<ul style="list-style-type: none"> • Functional knowledge of the international legal framework for outer space.
		<p>Moon Agreement UN Instruments pp. 30-38 <i>Read</i> Preamble, Arts. 1, 7, and 11. <i>Skim</i> Arts. 2-6, 8-11, 12-15.</p>	<ul style="list-style-type: none"> • Functional knowledge of the international legal framework for outer space. • Be aware of major controversies in the interpretation and application of the space treaties. <p>--</p> <p>The Moon Agreement, with only 18 States Parties, not including the United States or other major spacefaring States, has not gained the traction of the so-called "four core" space treaties. While binding on its States Parties, the Moon Agreement is not a source of law for the majority of space actors. We will cover the international law and politics of space resources in the March 15 and 16 classes.</p>

		Status of Ratifications of UN Space Treaties <i>Skim</i> pp. 5-10	Quickly skim for a sense of the membership of the 5 UN space treaties.
January 24	The International Regime for Outer Space	Brian Israel, Treaty Stasis, 108 AJIL UNBOUND 63 (2014) <i>Read</i> § 14.10 (pp. 940-945)	<ul style="list-style-type: none"> • Understand how space law fits into the international regime for outer space.
	National Security & Military Space Activities	Department of Defense Law of War Manual (December 2016 Update) <i>Read</i> § 14.10 (pp. 940-945)	<ul style="list-style-type: none"> • Be aware that outer space is used for national security and military purposes, and that the corpus of international law, including the Law of Armed Conflict, applies to outer space. <p>--</p> <p>Since long before the Space Force became a punchline, space assets have been inextricably integrated into the operations of the U.S. military and “near-peer” militaries. Read the Law of War Manual for confirmation that (1) the Outer Space Treaty governs all space activities, including military operations; and (2) that the general corpus of international law, including the Law of Armed Conflict, apply to space. <i>How do these sources of international law shape and constrain military operations?</i> That is unsettled, and thankfully, largely untested. If you’re interested in academic and NGO perspectives on these issues, you might follow the Woomera Manual project and the MILAMOS project.</p> <p>*Bonus* Can you spot a mistaken reading of the OST in the Law of War Manual that potentially cedes more operational freedom than necessary?</p>
	Export controls	U.S. Department of Commerce and FAA: Introduction to Export Controls for the Commercial Space Industry <i>Read</i> pp. 4-10; 14-19 (the full guide will be a useful reference should you find	<ul style="list-style-type: none"> • Be familiar with how space law is practiced in a range of public and private contexts.

		yourself working within a space organization)	
	Long-term sustainability of outer space (including orbital debris mitigation and removal, and so-called space traffic management)	UN COPUOS Guidelines for the Long-term Sustainability of Outer Space Activities . <i>Read ¶¶ 14-15; skim the rest for a sense of the aspects of space activities they address, and how the guidelines address them.</i>	<ul style="list-style-type: none"> • Be able to predict how space law might develop to address contemporary and future challenges. <p>--</p> <p>What is the legal character of these guidelines (are they a source of law)? How might they influence space activities?</p>
		PJ Blount, Space Traffic Management: Standardizing On-Orbit Behavior , 113 AJIL UNBOUND 120 (2019).	Be able to predict how space law might develop to address contemporary and future challenges.
January 25	The U.S. Regulatory Framework for Commercial Space Activities	Congressional Research Service: Commercial Space: Federal Regulation, Oversight, and Utilization (November 29, 2018) <i>Read</i> pp 1-7; 8-9; 11-15	<ul style="list-style-type: none"> • Develop a functional knowledge of the U.S. regulatory framework for commercial space activities. <p>--</p> <p>This is a concise overview of the U.S. regulatory framework.</p>
		51 U.S.C. Chapter 509—Commercial Space Launch Activities <i>Skim</i> §§ 50904; 50905; 50909; 50914; 50915; 50917; 50918.	<ul style="list-style-type: none"> • Understand how the United States implements its obligations under Article VI of the Outer Space Treaty. <p>--</p> <p>What is the scope of the FAA’s jurisdiction to regulate commercial space activities? How does this launch licensing framework enable the U.S. Government to implement its obligations under Article VI of the Outer Space Treaty?</p>
		14 CFR §§ 415.51-415.63 (FAA Payload Review)	<ul style="list-style-type: none"> • Understand how the United States implements its obligations under Article VI of the Outer Space Treaty. <p>--</p> <p>The Payload Review process is being used as a stopgap measure for reviewing newly-contemplated space activities that color outside the lines of the existing regulatory framework.</p>
		NOAA Advanced Notice of Proposed Rulemaking: Licensing Private Remote Sensing Systems .	<ul style="list-style-type: none"> • Develop a functional knowledge of the U.S. regulatory framework for commercial space activities. <p>--</p>

		Read Background and Topics 1-4	Read this concise summary to get a feel for the license requirements for private remote sensing systems, the sources of authority for these regulations, and operator discontent with the existing processes and requirements.
		FCC Notice of Proposed Rulemaking: Streamlining Licensing Procedures for Small Satellites Read ¶¶ 10-20 (pp. 7-13 of PDF)	<ul style="list-style-type: none"> • Develop a functional knowledge of the U.S. regulatory framework for commercial space activities. <p>--</p> <p>From these excerpts you should take away a very basic understanding of communications licensing requirements and processes for satellites (relevant authorities—FCC and ITU—and basic categories under which the FCC licenses satellites).</p>
		FCC Consent Decree in the Matter of Swarm Technologies Inc. (December 2018) Read pp. 1-7 of PDF (through ¶ 7)	<ul style="list-style-type: none"> • Develop a functional knowledge of the U.S. regulatory framework for commercial space activities. <p>--</p> <p>A very recent case study in what happens when commercial satellite operators disregard licensing requirements.</p>
	Evolving the U.S. regulatory framework for contemporary and future space activities.	April 4, 2016 Report of the White House Office of Science and Technology Policy to Congress pursuant to § 108 of PL 114-90 (“Section 108 Report”)	<ul style="list-style-type: none"> • Understand how the United States implements its obligations under Article VI of the Outer Space Treaty. • Critically evaluate proposed legislation. <p>--</p> <p>Read this to understand “the Article VI problem”—the gap in the United States Government’s authorities to implement its obligations under Article VI of the OST in relation to newly-contemplated space activities—and for the Obama Administration’s proposed legislative solution.</p>
		Brian Egan, The Next Fifty Years of the Outer Space Treaty , December 6, 2016	<ul style="list-style-type: none"> • Be aware of major controversies in the interpretation and application of the space treaties. • Understand how the United States implements its

			<p>obligations under Article VI of the Outer Space Treaty.</p> <ul style="list-style-type: none"> • Assess the tradeoffs between a prescriptive approach to new technologies and capabilities (e.g, prescribing regulations in advance, code-like detail) versus more flexible, reactive approaches. • Be able to predict how space law might develop to address contemporary and future challenges.
		<p>Congressional Research Service: Commercial Space: Federal Regulation, Oversight, and Utilization (November 29, 2018) Read pp 15-21</p>	<p>This section of the CRS Report introduces U.S. law relating to the long-term sustainability of outer space (debris mitigation, STM) and the “Article VI” problem. It also summarizes some of the ways in which the U.S. Government’s relationship with commercial space companies can be that of <i>customer</i> or <i>operator</i> as well as <i>regulator</i>.</p>
		<p>H.R. 3610: American Space Commerce Free Enterprise Act of 2019</p> <p>Read §§ 80102-80103 (pp. 11-19 of PDF)</p>	<ul style="list-style-type: none"> • Critically evaluate proposed legislation <p>--</p> <p>How do §§ 80102-80103 address the gaps in U.S. Government authority to implement Article VI of the Outer Space Treaty in relation to newly-contemplated space activities?</p>
	Space Resources	<p>Space Resource Exploration and Utilization Act of 2015</p> <p>Read Title IV (last 3 pages of PDF)</p>	<ul style="list-style-type: none"> • Be aware of major controversies in the interpretation and application of the space treaties.
		<p>Brian Israel, Space Resources in the Evolutionary Course of Space Lawmaking, 113 AJIL UNBOUND 114 (2019).</p>	<ul style="list-style-type: none"> • Understand how space law is made (processes, actors). • Understand how space law fits into the international regime for outer space.

Optional Recommended Reading

Class Date	Topic	Optional Reading	Relevant Learning Outcome
January 23	The nature and purpose of space law	<p>Myers McDougal and Leon Lipson, <i>Perspectives for a Law of Outer Space</i>, 52 <i>AM. J. INT'L L.</i> 407 (1958)</p> <p>Read Sections I to IV and VI</p>	<ul style="list-style-type: none"> • Understand the practical problems space law intends to solve. • Assess the tradeoffs between a prescriptive approach to new technologies and capabilities (e.g, prescribing regulations in advance, code-like detail) versus more flexible, reactive approaches. • Situate the present state of space law and its controversies in historical context. <p>---</p> <p>Published within a year of Sputnik, this is a perspective on <i>why</i> space law before space law existed. Read it for general ideas, not as a statement of current or future law. McDougal and Lipson were cautious, pragmatic voices in the face of calls to prescribe laws to regulate newly-contemplated space activities. Put yourself in their shoes, as lawyers at the dawn of a new domain of human activity. How would you strike these balances? Space lawyers are wrestling with more or less the same problems and divergent philosophies today.</p>
		<p>Elon Musk, <i>Making Humans a Multi-Planetary Species</i>, presentation at the 67th International Astronautical Congress in Guadalajara, Mexico (2017).</p>	<ul style="list-style-type: none"> • Understand the practical problems space law is intending to solve. <p>---</p>

		Please <i>skim</i> for the big picture.	This is one (influential and audacious) person's answer to the questions of <i>why go to space? Why explore and settle other planets</i> . And one of the more bullish visions for the next half-century of human activities in outer space.
	<ul style="list-style-type: none"> • Jurisdiction • Responsibility • Planetary Protection • FAA Payload Review 	<p>Christopher D. Johnson et. al, The curious case of the transgressing tardigrades, THE SPACE REVIEW, Aug 26, 2019</p> <ul style="list-style-type: none"> • Part 2 • Part 3 	<ul style="list-style-type: none"> • Be able to interpret the Outer Space Treaty and its progeny and apply their provisions to past, present and future factual scenarios. • Understand how the United States implements its obligations under Article VI of the Outer Space Treaty. <p>--</p> <p>A detailed analysis of the stranger-than-fiction scenario in which a self-described "pirate" snuck microscopic organisms onto the first private lunar lander mission.</p>
January 24	Long-term Sustainability of Outer Space / Space Traffic Management	TruSat White Paper Read pp. 5-10	<ul style="list-style-type: none"> • Be able to conceptualize the practical problems space law aims to solve. <p>--</p> <p>This section of the white paper describes an externality in the liability framework, and why the incentives of satellite operators faced with a collision warning are not necessarily aligned with the common interest in the long-term sustainability of spaceflight. It also describes the emerging ecosystem of actors seeking to promote sustainable orbital operations.</p>
		Space Policy Directive 3	Be able to predict how space law might develop

		<i>Skim</i> for a sense of what activities and capabilities the Executive Branch groups under “Space Traffic Management,” and the nature of the measures it prescribes and encourages.	to address contemporary and future challenges.
January 25	Space Resources	Building Blocks for the Development of an International Framework on Space Resource Activities	<p>Be able to predict how space law might develop to address contemporary and future challenges.</p> <p>--</p> <p>The Building Blocks are the result of discussions among a handful of scholars, companies, NGOs, and government representatives about the basic attributes of an international framework for space resource utilization</p>
	FCC Satellite Licensing	FCC Report and Order on Streamlining Licensing Procedures for Small Satellites (Aug. 2, 2019)	<ul style="list-style-type: none"> • Develop a functional knowledge of the U.S. regulatory framework for commercial space activities. <p>--</p> <p>You read an excerpt from the NPRM for the FCC’s revisions to commercial small satellite licensing for its description of the FCC’s satellite licensing procedures. This Report and Order is the result of that rulemaking process and states the new optional licensing procedure for commercial small satellites.</p>

Additional Resources

Resource	Read if you're interested in...
Brian Israel, <i>Help from Above: The Role of International Law in Facilitating the Use of Outer Space for Disaster Management</i> , in THE INTERNATIONAL LAW OF DISASTER RELIEF (David Caron, et al., eds., Cambridge University Press, 2014).	Case studies in (A) how nations and private actors cooperate to use space for humanitarian applications on Earth; (B) how States' approach to structuring international space cooperation has evolved over time; and (C) a framework for assessing the tradeoffs between treaties and less formal mechanisms for international cooperation.
Global Exploration Roadmap of the International Space Exploration Coordination Group (ISECG)	Where space exploration is headed, and how major space agencies intend to get there. This is the latest coordinated space exploration roadmap of the 14 national space agencies that participate in ISECG.
Carl Sagan, Pale Blue Dot (Audiobook link)	<i>Why</i> should we explore space, relative to the many terrestrial problems to which space exploration budgets could be diverted? I found listening to Sagan's great mind wrestle with these questions thought-provoking and inspiring, and the audiobook an enjoyable commuting companion. More than twenty years after Sagan wrote Pale Blue Dote, most of it is still somehow current.
www.spacenews.com and www.parabolicarc.com	What's happening in the space sector—from industry news to legislative developments to major mission milestones.
The American Society of International Law's Space Law Interest Group and the International Institute of Space Law .	Space law scholarship and colloquia. Participation in the ASIL's space law IG requires ASIL membership. The IISL is also a membership organization, but you need not be a member to access most of its publications and conferences.