

ECON 385, Emory University – Fall 2024
Syllabus for Economics of Blockchain and Digital Assets
Professor Grennan



EMORY | COLLEGE OF ARTS AND SCIENCES

Administrative Matters

Instructor name and email address. Professor Jillian Grennan (she/her), jillian.grennan@emory.edu My preferred way to be contacted is via email. I also check Canvas for messages, especially about assignments, but less frequently than email.

Office hours. Wednesday 1:15-2:45 p.m. and by appointment. Please email me to set up a Zoom chat or in-person meeting. The TA will also hold office hours on Wednesday afternoon.

TA. Niall Peat, Economics PhD student, niall.peat@emory.edu

Class recordings. Posted to Canvas after class, including both Zoom recordings and in-person meetings.

Please do not share class recordings. Advancements in technology have made it possible to create deepfake images and video readily. Therefore, please do not disseminate or share of any classroom recording without my permission as it would be considered “misuse.” It is important to recognize that the lectures presented through video conferencing and other materials posted on Canvas are for the sole purpose of educating the students enrolled in the course. The release of such information (including but not limited to directly sharing, screen capturing, or recording content) is strictly prohibited. Doing so without my permission will be considered an Honor Code violation and may also be a violation of other state and federal laws, such as the Copyright Act. At my discretion, violations of this policy may also have an adverse effect on the student’s grade.

Course Description and Learning Outcomes

The scale of digital asset activity has increased significantly in recent years. Although interconnections with the traditional financial and economic systems are relatively limited, they could grow rapidly. This course introduces students to emerging technologies associated with decentralized systems, beginning with the principles of blockchain technology and smart contracts. Students will gain a comprehensive understanding of how these technologies underpin the growing area of decentralized finance (DeFi) and how it contrasts with traditional finance. The course highlights decentralized systems’ unique advantages and challenges through detailed examinations of applications such as decentralized exchanges (DEXs), stablecoins, decentralized autonomous organizations (DAOs), and a variety of protocols supporting decentralized AI systems. The course will end with an introduction to governance and regulatory frameworks in the blockchain ecosystem, assessing their effectiveness and potential vulnerabilities. By engaging with these topics, students will understand the economic principles at play within decentralized systems and be able to critically assess their broader implications for life in the digital age.

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After taking this course, you will be able to:

- Recognize and define the basic vocabulary of emerging technology related to digital assets and blockchain, including terms like consensus mechanisms (e.g., Proof-of-Stake vs. Proof-of-Work), smart contracts, DeFi, DAOs, NFTs, SBTs, DEXs, bridges, oracles, ZK-proofs, wallets, etc...;
- Describe the economic forces that lead to a need for intermediaries in systems and identify the economic principles governing decentralized systems;
- Prepare critical analyses of economic and regulatory issues pertaining to digital assets;
- Identify and analyze risks in decentralized systems and provide recommendations on how to strengthen security and mitigate systemic risks
- Evaluate different approaches to AI system design (centralized vs. decentralized) across dimensions where blockchain provides complementarities such as data management, model development, control of computing resources, and governance structures.

Course Prerequisites

No prior background in the study of digital assets is expected. ECON 101 and ECON 112 are official prerequisites, but you can ask me to explain key concepts if you either forget or have never learned.

Textbooks

There is no assigned textbook for the course. Instead, I will be distributing reading materials such as academic articles, or news articles from Coindesk, Bloomberg, the Wall Street Journal, etc... on Canvas (see next).

Course Resources

I will manage course announcements and assignments through Canvas. If you are unable to access the Canvas site, please contact me as soon as possible. A copy of the syllabus, detailed reading lists, and copies of class materials can be found there. Class materials, including slides, will be posted to Canvas immediately before each class. Materials in this course are protected by United States copyright laws. I am the copyright holder of the materials I create, including notes, handouts, slides, and videos. You may make copies of course materials for your own use and you may share the materials with other students enrolled in this course. You may not publicly distribute the course materials without my written permission.

Student Technology Help

If technical difficulties prevent you from completing course work, please alert me immediately. However, understand that I cannot assist you with technical problems. Please use the technical support resources available through Emory. Be sure to document all interactions with tech support (e.g., save emails). For several different ways to get assistance and troubleshoot problems, see <https://classes.emory.edu/gethelp/index.html>

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For Zoom assistance, you can get support from the Zoom Help Center website:

<https://support.zoom.us/hc/en-us>

For computing support, visit the Student Technology Support desk Mon-Fri for walk-up assistance on Level 1 of Woodruff Library. For after-hours support, call 404-727-7777 or visit help.emory.edu.

For presentations, please note that all classrooms are equipped with a podium and an overhead projector.

Grading and Evaluation

I will evaluate your performance in the following areas:

- **Written Assignments (40%)**
 - **Assignment #1 (10%):** Due September 12th
 - **Assignment #2 (10%):** Due October 3rd
 - **Assignment #3 (10%):** Due November 5th
 - **Assignment #4 (10%):** Due November 21st
- **Mid-term and Final Exam (30%):** October 10th
- **Class Contribution and Attendance (20%)**
- **Personal Reflection (10%):** Your chance to grow as a leader. There are no right or wrong answers, I want to hear your reflections on issues raised in class and see how you apply critical thinking. You will present your personal reflection in the last two classes.
- **Extra-credit presentations (up to 2.5%):** In association with “Written Assignments.” You need to sign-up to present one class prior to the due date. I will remind you.

Written Assignments. There are four written assignments, which are to be done individually as take-home assignments. Grammar and spelling count, please proofread your papers. To be eligible for full credit, assignments must be submitted by the deadline stated in the syllabus. Absent an extension based on “extraordinary circumstances” (see below for the definition of “extraordinary circumstances”), assignments completed late will receive an automatic 20%-per-day reduction in points, beginning after a 10-minute grace period (e.g. if an assignment is due at 11:59pm on Friday, it will automatically lose 20% at 12:10am on Saturday morning, an additional 20% at 12:10am on Sunday morning, etc.).

Mid-term and Final exam. It will be a mix of true and false, multiple-choice, quantitative and short-answer questions. You will see examples throughout the term via “Concept Checks.” It will be open note. The TA will hold review sessions prior to the exams.

Class Contribution and Attendance. Class contribution and attendance are comprised of three parts: (i) a student-led discussion of current events, (ii) a student-led sharing of your journal entry about your experiences in a particular DAO or Web3 community, and (iii) attendance, communication, and discussion in class.

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First, given that the economics of blockchain and digital assets are constantly evolving, an important component of this course is to get up-to-date on current trends. Each class will begin with a student-led discussion of current events in this space. This involves summarizing recent relevant news articles, highlighting why they are newsworthy, and leading a discussion of what the economic implications are, if any. The final step involves posing questions to the class to help them get more actively involved in current discussions in this space. Each student will be expected to lead the discussion of current events at least once during the semester to get full credit. We will have a sign-up on the first meeting date. If you need ideas, consider reading Matt Levine's opinion column:

<https://www.bloomberg.com/opinion/authors/ARbTQIRLRjE/matthew-s-levine>, a16z crypto <https://a16zcrypto.com/> or 21shares <https://21shares.com/en-us> newsletters.

Second, participants in the class are expected to keep a journal of their experiences in a particular DAO or Web3 community and to share an entry from that journal on Canvas on non-assignment and non-test weeks (see calendar). The particular DAO or community will be their choice. For instance, MakerDAO, Gitcoin, Developer DAO, KlimaDAO, Arbitrum Foundation, Optimism, Ocean Protocol, ENS (Ethereum Naming Service), Apecoin, SuperRare, Near Protocol, Lido Finance, etc... are all great choices, but please feel free to pick something that excites you. Each entry should be posted to Canvas before class on Thursday. The journal entries will constitute half of the class contribution grade. There will be a series of suggested questions for completing this journal component. Weekly entries should be between 400-500 words. Images and screenshots can be helpful for describing experiences. At the end of the term, you are expected to present the learnings from your overall experience.

Third, class is always more fun when you ask questions and are engaging with the material. And in some classes, we will work on in-class assignments. Therefore, attendance and active contribution by answering questions, commenting on applications and examples, and reflecting on potential economic issues is critical for everyone's learning. Much of our class discussion will be driven by the content covered in class that day. As such, absent special circumstances noted below, I expect students to attend each class session and to be prepared to discuss the relevant topics. During discussions, quality is what matters. Effective class participation moves the debate forward by building on previous comments and creating an inclusive environment for you and all of your classmates.

As noted above, all classes will be recorded to accommodate students who may be unable to attend a live session for any number of reasons. If you are unable to attend a class, please notify me of your expected absence in advance of class, if possible. If you are unable to provide advance notice due to an emergency, please contact me as soon as possible with an explanation for the lack of advance notice so that it does not adversely affect your grade.

Missing one lecture would cause the final grade to be reduced by one percentage point. Other actions that would cause your class contribution grade to be lower include using your phone during class, doing other work during class, sleeping during class, and/or discussing your plans

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for the weekend or something similar when you have been asked to work on an in-class activity. Any class where these activities are observed will result in a one percentage point reduction. Finally, while you may pass if you are called on in class and have nothing to contribute, you have at most two passes without affecting the final grade. Beyond two passes, failing to answer or respond when called upon would cause final grades to be reduced by half a percentage point each time it happens.

Make-up for Missed Classes. Students who miss class can make up for it by sending me an email with a news article that is relevant to digital assets, along with a one-paragraph explanation of why the article is relevant to the course.

Class Notes. Taking class notes can be very useful. I also want to offer some evidence that taking notes by hand may improve your own comprehension. Please see for example, this paper for the actual research (<https://journals.sagepub.com/doi/abs/10.1177/0956797614524581>) and/or this nice op-ed (<https://www.washingtonpost.com/posteverything/wp/2014/12/30/this-year-im-resolving-to-ban-laptops-from-my-classroom/>) summarizing recent research.

Personal Reflection. Each individual will submit a personal reflection. If you make a good effort and follow the directions, you will get full credit for the reflections. You should submit a 2-3 page (double-spaced Times New Roman 12 pt., 1 inch margins) reflection with your thoughts about the economics of digital assets. You may choose your own topic for the reflection. The goal of your personal reflection is to develop your own original thoughts about digital assets. In seeking to generate a new idea, do not be afraid to take a risk. The key to the reflection is the quality of your idea, so please do not feel that you have to fill many pages with writing for the sake of writing. Instead, what I seek is expository clarity in relation to your idea. Summarize your idea, and then explain how it fits into what you have learned in class, and what your unique angle or economic perspective you are bringing to existing debates.

Extra-credit Presentations. Individuals will be able to present 10-minute presentations with slides for any of the assignments in class on the day that they are due. No more than two students may present in any assignment, and only one presentation per student per term.

Your final letter grade depends on the following grading scale.

≥ 93% A
90-92.9% A-
87-89.9% B+
83-86.9% B
80-82.9% B-
77-79.9% C+
73-76.9% C
70-72.9% C-
67-69.9% D+
60-66.9% D
< 60% F

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Promoting Diversity, Inclusion, and Wellness within the Classroom

Land Acknowledgment. Emory University acknowledges the Muscogee (Creek) people who lived, worked, produced knowledge on, and nurtured the land where Emory's Oxford and Atlanta campuses are now located.

Respect for Diversity. It is my intent that students from all diverse backgrounds and perspectives be well served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength and benefit. It is my intent to present materials and activities that are respectful of diversity: gender, sexuality, disability, age, socioeconomic status, ethnicity, race, religion, and culture. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally or for other students or student groups. In addition, if any of our class meetings conflict with your religious events, please let me know so that I can make arrangements for you.

Gender Inclusive Language. This course affirms people of all gender expressions and gender identities. If you go by a name different from what is on the class roster, please let me know. Using correct gender pronouns is important to me, so I encourage you to share your pronouns with me and correct me if I make a mistake. If you have any questions or concerns, please do not hesitate to contact me.

Policies Designed to Ensure Fairness

Honor Code. You are expected to adhere to the provisions of the Honor Code of Emory College. Suspected cases of academic misconduct will be handled according to the Honor Code, which can be found at [Emory College Honor Code](#).

As a reminder of the commitment to academic integrity that everyone in the Emory University community has made, each student will sign the following Honor Pledge on examinations and major academic assessments:

I pledge to abide by the Emory Honor Code in all academic work and avoid any action that would provide an unfair advantage.

Academic Misconduct. Academic misconduct is a violation of the Honor Code and is generally defined as any action or inaction that is offensive to the integrity and honesty of the members of the academic community. In addition to the violations enumerated in this article, instructors at Emory University have reasonable discretion to establish specific standards and policies as related to their courses and assignments. Such additional standards and policies should be clearly articulated in the syllabus, in the assignment, or otherwise conveyed as an expectation by the instructor. It is the responsibility of each student to understand the policies established in the Honor Code, syllabi, and assignments, and act accordingly.

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Academic misconduct includes, but is not limited to, the following actions: cheating, plagiarizing, lying and dishonesty, violating community standards, violating standard in the honor code process. For detailed descriptions, please see: [Emory College Honor Code](#)

Extraordinary circumstances. Timely submission of assignments is an important part of professionalism. As such, I generally expect you to submit each assignment by the due date. I understand, though, that extenuating circumstances may sometimes prevent you from doing so. If you need to submit an assignment late due to an “extraordinary circumstance,” please let me know as soon as possible via email. Extraordinary circumstances are (usually unexpected) that interfere with your ability to complete a timely submission of an exam or a timely submission of an assignment. Such circumstances may include illness, accident, approval through disability services, disruptions due to official school obligations (such as for athletics), religious holidays, or other circumstances beyond your control. Generally, extraordinary circumstances do not include voluntary social activities, voluntary recreational activities, or the need to study for exams or complete assignments in your other classes. When evaluating whether your circumstances are extraordinary, I consider the amount of advanced notice given to me. Also, depending on the nature of the circumstances and the particular deadline, I may require additional details or supporting material.

To obtain an extension or an excused absence based on extraordinary circumstances, please send me an email as soon as you are aware of the need for an extension or excused absence. The message should explain the extraordinary circumstances that prevent you from completing the exam or assignment by the deadline. I will reply to the message confirming whether an extension is granted or the absence is excused. Depending on the circumstances, additional evidence may be required. If you have not received a reply from me confirming the extension within 24 hours (e.g., because I may have missed your message or an error may have disrupted the electronic message), please follow up with me ASAP about the status of your request. If you fail to communicate with me, unexcused late or incomplete assignments will result in reduced points for that assignment.

Grade Dispute. Please turn in a written petition and if it involves a specific assignment, a copy of the assignment. Any request for a re-grade will result in a re-grade of the entire assignment.

Accommodations for those with a Disability. If you have a documented disability for which accommodations may be required in this class, please contact the Department of Accessibility Services (<https://accessibility.emory.edu/>) as soon as possible to discuss your needs and register for accommodations with the University. If you have already arranged accommodations, please be sure to request your accommodations through the Accommodate portal and discuss them with me during my office hours within the first two weeks of class.

To ensure fairness and consistency, it is required that I receive verification from the Department of Accessibility before providing accommodations. The department will work with students and faculty to arrange proctored exams for students whose accommodations include double time for

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exams and/or assistive technology. Students with approved accommodations of time-and-a-half should talk with me as soon as possible to schedule proctored examinations or to arrange other accommodations.

Discrimination, Harassment and Sexual Misconduct (Title IX). Emory University is committed to providing all students with a safe learning environment free of all forms of discrimination, sexual harassment, and sexual violence.

Should you need support, Emory has dedicated staff trained to assist you in navigating campus resources, accessing health and counseling services, providing academic and housing accommodations, helping with legal protective orders, and filing a formal complaint with the University or with law enforcement. Please see Emory's Equity and Compliance page for more information about reporting options and resources: <https://equityandcompliance.emory.edu/>

Well-being. Many students face personal and environmental challenges that can interfere with their academic success and overall wellbeing. If you are struggling with this class, please visit me during office hours or contact me via email at jillian.grennan@emory.edu. If you are feeling overwhelmed and think you might benefit from additional support, please know that there are people who care and offices to support you at Emory. These services – including confidential resources – are provided by staff who are respectful of students' diverse backgrounds. For an extensive list of well-being resources on campus, please go to: <http://campuslife.emory.edu/support/index.html>.

And keep in mind that Emory offers free, 24/7 emotional, mental health, and medical support resources via TimelyCare: <https://timelycare.com/emory>

Course Schedule

As noted above, the reading list associated with specific lectures is available on Canvas. Below you will find an outline of the specific topics covered in the course. Dates highlighted in red are when exams will be held.

Fall Term

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Date	Class #	Topic	Assignment Due
8/29/2024	1	Intro: Economics of blockchain and digital assets	
9/3/2024	2	Intermediation	
9/5/2024	3	Centralization vs. Decentralization and Bitcoin	Journal Entry #1: DAOs and Web3
9/10/2024	4	Blockchain Consensus Mechanisms and Economic Incentives	
9/12/2024	5	Illegal Activity and Key Concerns Surrounding Bitcoin	Writing Assignment #1: Bitcoin Investment
9/17/2024	6	Blockchain Applications and Token Types	
9/19/2024	7	Smart Contracts vs. Legal Contracts	Journal Entry #2: Why Blockchain and Decentralization?
9/24/2024	8	Smart Contract Risks and Security	
9/26/2024	9	Lending: TradFi, P2P, DeFi	Journal Entry #3: Why Might Regulators Worry?
10/1/2024	10	Stablecoins	
10/3/2024	11	Oracles and DEXs	Writing Assignment #2: Decentralized Finance
10/8/2024	12	Review for Mid-term Exam	
10/10/2024	13	Mid-term Exam	
10/15/2024	<i>FALL BREAK</i>		
10/17/2024	14	Intro to Regulating Emerging Technology	Journal Entry #4: Tooling and Interoperability
10/22/2024	15	Initial Coin Offerings and Howey Test	
10/24/2024	16	Regulatory Challenges and Cost-Benefit Analysis	Journal Entry #5: Decentralized Data and Open-Source Code
10/29/2024	17	Ripple vs. SEC and Regulation by Enforcement	
10/31/2024	18	Zero-knowledge proofs, wallets, and in-class exercise	
11/5/2024	19	Protective vs. Enabling Legislation, Europe's MiCA Regulation	Writing Assignment #3: Ripple's Future and the Business of Crypto
11/7/2024	20	Introduction to DAOs	
11/12/2024	21	Cyberlaw and Digital Commons	Journal Entry #6: Coordination and Incentivized Behavior
11/14/2024	22	DAO Coordination Challenges and	Journal Entry #7: Politics and Resource Allocation
11/19/2024	23	LLMs, Agentic AI, AI x Crypto	
11/21/2024	24	NFTs, Soulbound Tokens, Intellectual Property, and Web3	Writing Assignment #4: AI x Crypto
11/26/2024	25	ONE-ON-ONES FOR PRESENTATION	Please schedule meeting with me
11/28/2024	<i>THANKSGIVING</i>		
12/3/2024	26	Final-exam Review	
12/5/2024	27	PRESENTATION	Personal Reflection Due
12/10/2024	28	PRESENTATION AND WRAP-UP	