Blockchain: The New Internet | ARTTECH 4144 – SYLLABUS

- **CREDITS:** 3
- **SEMESTER:** Fall 2021 — Tuesday Sep 7, 2021 – Tuesday Dec 14, 2021
- **MEETING DAYS/TIMES:** Tuesdays, 9am-5pm (9am-12pm, BREAK, 2p-5p)
- **LOCATION:** Online only (Zoom link will be posted in Canvas)
- **INSTITUTION:** The School of the Art Institute of Chicago
- **INSTRUCTOR:** Doug Rosman, Lecturer — drosman@saic.edu — dougrosman.com
- **LAST DAY OF ADD/DROP:** Tuesday, September 14

CLASS WEBSITE AND MATERIALS

- Canvas Page
- Course Website (this will be added to over the course of the semester with links to tech demos)
- Class GitHub Repository (Find class code and demos here)
- Slack Workspace
    - Invite Link (Do this once to join the workspace)
    - Slack Workspace Link (Click here to access the workspace once you've joined)
- Are.na (A collaborative space to share and find resources)

COURSE DESCRIPTION

"*The Internet was about the exchange of information. Blockchain is about exchange of assets and exchange of value.*" — Research Fellow, Associate Director – Centre for Cryptocurrency Research, Imperial College

Blockchain: The New Internet will explore blockchain technology as a material for artistic practice and deep critical engagement. Blockchain—a technology designed for the secure storage and transmission of data on a decentralized network—is still in its relative infancy, yet its integration into the social fabric has had far-reaching transformations.

Students in this course will learn about current applications of blockchain as well as the technical skills to utilize blockchain technology such as smart contracts on the Ethereum blockchain and the Solidity programming language, and will apply these tools toward crafting blockchain-based art works. We will examine the works of contemporary artists working with and around blockchain technologies today like Sarah Meyoas, Simon Denny, Rhea Meyers and Larva Labs, while also exploring the work of conceptual artists that explore the relationship between art, networks and economic value like Piero Manzoni, Justin Gignac and Hans Haacke. Readings will cover aspects of the cultural, historical, philosophical, economic, technical and artistic contexts that intersect with blockchain. Additional screenings and readings will provide technical foundation for blockchain technology. Students will create a mid-term and final project with respective critiques. Weekly homework assignments will incorporate technical exercises to reinforce in-class material and readings to discuss in class.

ASSESSMENT AND GRADING

In order to receive credit for this course:

1. Follow the attendance guidelines
2. Attend the final critique
3. Present work for the midterm
4. Complete a final project

READINGS + VIEWINGS + LISTENINGS

Articles, essays, excerpts, podcast segments and video material will be assigned weekly as they pertain to the course content.

The following book is a foundational text for the course. I will select various readings from this book throughout the course, but you are encouraged to read the entire book. The following link will download the free PDF of the book.

Artists Re:Thinking the Blockchain – Ruth Catlow, Marc Garrett, Nathan Jones & Sam Skinner (2017)

"In practice, we do not use the blockchain, but we would invite the reader to imagine that we do, as it makes the technical development significantly easier, without materially affecting the experience."

COURSE OVERVIEW

This course will function as a studio/seminar hybrid course, meaning that there will be a greater emphasis on lectures, reading and discussions than your typical studio course. Given the open nature of blockchains as a material, tool and context for artistic exploration, the nature of work in this class ranges from the deeply conceptual and speculative, to highly technical. While we will spend a good portion of the course learning Solidity–the programming language used to create Ethereum smart contracts–the work you create in this class doesn't have to use these tools. Learning these technologies is difficult, but even if you don't have any coding experience, you will still be able to create work in this class.

COURSE GOALS

1. Develop an understanding of blockchain technologies, to the point that you could explain the basics to someone who knows nothing about the technology.
2. Learn the fundamental technologies that enable cryptocurrencies, such as Consensus Algorithms (Proof-of-Work, Proof-of-Stake), Private Key Cryptography, and Hashing Algorithms.
3. Learn the cultural and historical context of blockchains: why and how they came to be, and how they function in contemporary culture. Specifically, what are the beliefs and biases about technology that guide the development of blockchain-based projects?
4. Understand how artists have experimented with blockchain, and how the affordances of blockchain, specifically NFTs, are transforming the art world.
5. Learn the fundamental technical tools that allow you to engage with blockchains in order to create your own currencies, tokens, and smart contracts.

COURSE SCHEDULE

Note, this schedule is more a list of ideas and content we will explore this semester, rather than a rigid weekly scheduled. Put simply, this schedule is subject to change.

Week 1 - 9/7/21

1a Morning

- Introductions
- Syllabus
- Course overview/preview of topics
- What is a blockchain?
- Blockchain art vs. Art on the blockchain

1b Afternoon

- Setting up our tools
- Create Your Own Cryptocurrency workshop part I

Week 2 - 9/14/21

2a Morning

- Intro to cryptography (brief history, private key cryptography)
- Bitcoin historical/technical deep dive (Proof of Work, mining, Satoshi Nakamoto)
- Looking at the environmental impact of cryptomining

2b Afternoon

- Create Your Own Cryptocurrency workshop II

Week 3 - 9/21/21

3a Morning

- Intro to Ethereum (brief history, technical background)
    - Smart Contracts
    - The Aesthetics of contracts
    - ERC 20 (Fungible Token Standard)
    - ERC 721 (NFT Token Standard)
    - Ethereum 2.0

3b Afternoon

- Programming Smart Contracts in Solidity - Contract basics
- Creating a website frontend for interacting with your contract

Week 4 - 9/28/21

4a Morning

- Cryptocontext:
    - History of cryptography and cypherpunks
    - (Brief) History of money
    - The aesthetics of value/money

    - Crypto and politics: The libertarianism and anarcho capitalism of Bitcoin and cryptocurrencies, and room for blockchains in socialism.

4b Afternoon

- Programming Smart Contracts in Solidity - ERC 20 Tokens

Week 5 - 10/5/21

5a Morning

- NFTs Part I: Looking at the technical structure of NFTs, and the cultural explosion of NFTs, particularly in the last year.

5b Afternoon

- Programming Smart Contracts in Solidity - ERC 721 Tokens (NFTs)
- Discuss midterms

Week 6 - 10/12/21

6a Morning

- Introduction to DAOs (Dencentralized Autonomous Organizations)
    - What is a DAO
    - What can a DAO be?
    - The history of DAOs + The DAO Hack

6b Afternoon

- DAO workshop

Week 7 - 10/19/21

7a Morning

- Midterm presentations part I

7b Afternoon

- Midterm presentation part II
- Mid-semester check-in

Week 8 - 10/26/21

8a Morning

- Looking at planetary-scale computation, Ethereum and Benjamin Bratton's *The Stack: On Software and Sovereignty*
- Code == Law (Wendy Chun's On Source Codes and Sourcery)

8b Afternoon

- Programming Smart Contracts in Solidity
- Google's Teachable Machine (Machine Learning and image recognition in the browser)

Week 9 - 11/2/21

9a Morning

- Oracles, and the Oracle Problem
- Case study: Carbon Coin

9b Afternoon

- Programming Smart Contracts in Solidity (Creating an oracle)
- Discuss final projects

Week 10 - 11/9/21

10a Morning

- Social Tokens and tokenizing the self
- Brief introduction to DeFi (Decentralized Finance)

10b Afternoon

- Open studio time

Week 11 - 11/16/21

11a Morning

- The Metaverse
- David Rudnick's "Digital Prime vs. Physical Prime"

11b Afternoon

- Open Studio Time

Week 12 - 11/23/21

12a Morning

- Cryptocurrency and government regulation
- Cryptocurrency and crime

12b Afternoon

- Open Studio time

Week 13 - 11/30/21

13a Morning

- Open Studio time

13b Afternoon

- Final Project soft presentations

Week 14 - 12/7/21

Critique week - no class

- TBD: "Field Trip" to the iamnotart NFT Gallery in Chicago (Noble Square)

Week 15 - 12/14/21

15a Morning

- Final Critiques I

15b Afternoon

- Final Critiques II

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

SAIC is committed to full compliance with all laws regarding equal opportunities for students with disabilities. Students with known or suspected disabilities, such as a Reading/Writing Disorder, ADD/ADHD, and/or a mental health condition who think they would benefit from assistance or accommodations should first contact the Disability and Learning Resource Center (DLRC) to schedule an appointment. DLRC staff will review your disability documentation and work with you to determine reasonable accommodations. They will then provide you with a letter outlining the approved accommodations for you to deliver to your instructors. This letter must be presented before any accommodations will be implemented. You should contact the DLRC as early in the semester as possible. The DLRC is located within the Wellness Center on the 13th floor of 116 S Michigan Ave. and can be reached via phone at 312.499.4278 or email at dlrc@saic.edu.

ACADEMIC MISCONDUCT

From the SAIC Student Handbook: “Academic misconduct includes both plagiarism and cheating, and may consist of: the submission of the work of another as one’s own; unauthorized assistance on a test or assignment; submission of the same work for more than one class without the knowledge and consent of all instructors; or the failure to properly cite texts or ideas from other sources. Academic misconduct also includes the falsification of academic or student-related records, such as transcripts, evaluations and letters of recommendation. Academic misconduct extends to all spaces on campus, including satellite locations and online education.

Academic integrity is expected in all coursework, including online learning. It is assumed that the person receiving the credit for the course is the person completing the work. SAIC has processes in place, including

LDAP authentication, to verify student identity." Additional resources for students:

- Read "Plagiarism: How to Recognize It and Avoid It: a short guide prepared by the Faculty Senate Student Life Subcommittee in 2004.
- Read the Flaxman Library's quick guide titled "When to give credit."

ATTENDANCE

SAIC policy states that students are expected to attend all classes regularly and on time. Students should miss class only with reasonable cause. If a student needs to miss class with reasonable cause, it is the student's responsibility to contact the instructor to receive instruction for how to make up for the missed class. It is the instructor's responsibility to give this information to the student as his/her/their schedule permits. Missing class for other than a reasonable cause may jeopardize the student's academic standing in the class.
Attendance is required on the two final critique days to receive credit for this course.

- **If a student misses MORE than three classes, whether or not for a reasonable cause, the student will fail the class**, if the student does not withdraw from the class prior to the deadline for withdrawal with a grade of "W."
- **Three late arrivals to the morning portion of lecture will count as an absence.**
- **Arriving more than 30 minutes late to class will count as an absence**

Deadline for withdrawal: Fall 2021 semester: Tuesday, November 2, 2021

Reasonable cause to miss a class might include

- Illness or hospitalization (the student should also contact Health Services or their academic advisor, who will relay information to the faculty in whose class the student is enrolled)
- Family illness or death (the student should also contact their academic advisor, who can relay information to all faculty)
- Observation of a religious holiday (students are expected to notify their instructors in advance to discuss reasonable accommodations for holidays they might observe).

WRITING CENTER INFORMATION

The Writing Center will be open for tutoring appointments entirely online this fall. Tutors are available to assist currently enrolled students with any stage of the writing process, including work for Spine assignments.
Email: writingcenter@saic.edu
Phone: 312.499.4138
Writing Center Web Page: http://www.saic.edu/academics/academicresources/writingcenter/ \

ATS-SPECIFIC INFORMATION

ATS Facilities

Normal ATS facilities access, procedures and policies have changed significantly in response to COVID-19 pandemic. Please familiarize yourself with ATS facilities availability, capacity, authorizations, reservations, sanitation and other ATS-specific information in the ATS Facilities Canvas Course.

ATS Community

ATS is working to build a strong online and offline community during the COVID-19 pandemic. We strongly encourage all ATS students to sign up for our departmental forum at https://ats.community. Students can find out about visiting artist opportunities, upcoming ATS Town Halls, our Diversity, Equity and Inclusion reading group, special events, participate in discussions, and get help with their projects.

Community in the time of Covid

We understand the classroom as a space for practicing freedom; where one may challenge psychic, social, and cultural borders and create meaningful artistic expressions. We also recognize that in these unprecedented times each of our relationships to art and education are being asked to change in profound and fundamental ways. This course will not ignore the complexities of how the pandemic, current events, and society's evolving practices in health and safety are influencing our daily abilities to learn and engage.

To do so we must acknowledge and embrace the different identities and backgrounds we inhabit and recognize the many valid and varying experiences that shape the way we inhabit and express ourselves within this classroom. This means that we will use correct pronouns, respect self-identifications, and be mindful of each individual's needs. Each student is expected to practice agency in defining their own learning objectives with this course material and contribute to building a supportive environment for others to define and achieve their own learning objectives. Students are also expected to practice self-care- understanding that each of our learning happens differently as the circumstances of our lives fluctuate. Be patient with yourself and be mindful of what your health and body need in an online learning environment to best achieve your goals. Disagreement is encouraged and supported, however our differences affect our conceptualization and experience of reality, and it is extremely important to remember that certain gender, race, sex, and class identities are more privileged while others are undermined and marginalized. Consequently, this makes some people feel more protected or vulnerable during debates and discussions. A collaborative effort between the students, TA, and instructor is needed to create a supportive learning environment. While everyone should feel free to experiment creatively and conceptually, if a class member points out that something you have said or shared with the group is offensive, in lieu of defensiveness; this class will work to instead approach the discussion as a valuable opportunity for us to grow and learn from one another. Alternatively if you feel that something said in discussion or included in a piece of work is harmful, you are encouraged to speak with the instructor or TA.

Inspired and adapted from:
“What To Expect” by Chelsea Thompto
VoidLab / CC SA