

CSC299: Sophomore Lab in Applied Computing Web3, Blockchains and Smart Contracts

Syllabus for Winter 2023-2024

Course and Instructor Information

Meeting Time: Monday 3:10PM – 6:25PM

Location: CDM 00214 at Loop Campus

Instructor: Davie Sweis

Email: dsweis@depaul.edu

Office: TBD

Office Hours: Mondays 1:30PM – 3:00PM (or by appointment)

Preferred Contact: Email

Course Overview

This is a course designed to give students the basic understanding of Web3, blockchains and smart contract development. The course will be a combination of lecture, group work and hands-on labs. Students will work on projects that require software development skills and a focus on the decentralized and trustless nature of web3 and blockchain.

The course will stress the student's ability to learn and adapt to changing technologies. Web3 is filled with new ideas which are constantly changing. Students should be prepared to experiment and have fun with the dynamic world of Web3.

Course Objectives

In this course, students will:

- Understand the principles of web3 and blockchain, IPFS, including decentralized networks, consensus algorithms, and non-fungible tokens (NFTs).
- Experiment and innovate building their own ERC-20 cryptocurrencies and ERC-721 NFTs using Solidity.
- Understand basic properties and benefits of SHA-256 in the context of blockchain.
- Learn how to design and implement smart contracts.
- Develop problem-solving skills in a team-based environment.

Prerequisites

Please contact the instructor if you have any questions or concerns about the prerequisite requirement.

- ❑ Completion of CSC 242 or CSC 243 or an equivalent introduction of a programming course.
- ❑ Programming experience with python or JavaScript.

Textbooks

There are no required textbooks but many reference videos and websites will be used

Useful Readings (Please note, this is subject to change):

- ❑ <https://ethereum.org/en/developers/docs/intro-to-ethereum/>
- ❑ <https://bitcoin.org/bitcoin.pdf>
- ❑ <https://docs.openzeppelin.com/contracts/4.x/erc721>

Methods of Instruction

A combination of teaching methods will be used. Class time will be divided into lecture, group discussion and small group work. Please note: two classes (Week 3 and Week 4) will be pre-recorded lectures with homework assignments.

As web3 is still in its infancy, this class will use many real world and real time experiences. The subject will require you to learn and adapt to different ideas many of which have not been proven in industry yet.

Grading

The course grade is weighted as follows:

- ❑ Participation 20%
- ❑ Lab exercises and assignments 50%
- ❑ Final project and presentation 30%

Course Access

Course materials are available in Desire2Learn (D2L). Use your DePaul username and password to log in to the D2L home page (<http://d2l.depaul.edu>).

Weekly Schedule:

Week 1: Introduction to Web3

Week 2: Blockchain Development

Week 3: Ethereum and Digital Wallets (pre-recorded)

Week 4: Programming with Solidity (pre-recorded)

Week 5: Solidity Basics

Week 6&7: Solidity and ERC-20 Tokens

Week 8: ERC-721 and Decentralized Apps

Week 9: Working with IPFS

Week 10: DeFi's and DAO's

Changes to Syllabus

This syllabus is subject to change as necessary during the quarter. If a change occurs, it will be thoroughly addressed during class and posted under Announcements in D2L.

COVID-19 Health and Safety Precautions

The health and safety of everyone at DePaul depend on the cooperation of all who come to campus. By taking care of yourself, you protect the entire community.

DePaul's COVID-19 response plans are based on the latest guidance from the Centers for Disease Control and Prevention, the Chicago Department of Public Health and the university's medical advisor from AMITA Health.

Mandatory protocols must be followed by DePaul students, faculty and staff at all times on both campuses <https://resources.depaul.edu/coronavirus/guidance/health-safety-practices/Pages/default.aspx>.

Respect for Diversity and Inclusion at DePaul University as aligned with our Vincentian Values

At DePaul, our mission calls us to explore “what must be done” in order to respect the inherent dignity and identity of each human person. We value diversity because it is part of our history, our traditions and our future. We see diversity as an asset and a strength that adds to the richness of classroom learning. In my course, I strive to include diverse authors, perspectives and teaching pedagogies. I also encourage open dialogue and spaces for students to express their unique identities and perspectives. I am open to having difficult conversations and I will strive to create an inclusive classroom that values all perspectives. If at any time, the classroom experience does not live up to this expectation, please feel free to contact me via email or during office hours.

Online Course Evaluations

Evaluations are a way for students to provide valuable feedback regarding their instructor and the course. Detailed feedback will enable the instructor to continuously tailor teaching methods and course content to meet the learning goals of the course and the academic needs of the students. They are a requirement of the course and are key to continue to provide you with the highest quality of teaching. The evaluations are anonymous; the instructor and administration do not track who entered what responses. A program is used to check if the student completed the evaluations, but the evaluation is completely separate from the student's identity. Since 100% participation is our goal, students are sent periodic reminders over three weeks. Students do not receive reminders once they complete the evaluation. Please see <https://resources.depaul.edu/teaching-commons/teaching/Pages/online-teaching-evaluations.aspx> for additional information.

Academic Integrity and Plagiarism

This course will be subject to the university's academic integrity policy. All students are expected to abide by the University's Academic Integrity Policy which prohibits cheating and other misconduct in student coursework. Publicly sharing or posting online any prior or current materials from this course (including exam questions or answers), is considered to be providing unauthorized assistance prohibited by the policy. Both students who share/post and students who access or use such materials are considered to be cheating under the Policy and will be subject to sanctions for violations of Academic Integrity.

More information can be found at <https://resources.depaul.edu/teaching-commons/teaching/academic-integrity/Pages/default.aspx>.

Posting work on online sites, such as Hero

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Academic Policies

All students are required to manage their class schedules each term in accordance with the deadlines for enrolling and withdrawing as indicated in the University Academic Calendar. Information on enrollment, withdrawal, grading and incompletes can be found at:

<http://www.cdm.depaul.edu/Current%20Students/Pages/PoliciesandProcedures.aspx>

Incomplete Grades

An incomplete grade is a special, temporary grade that may be assigned by an instructor when unforeseeable circumstances prevent a student from completing course requirements by the end of the term and when otherwise the student had a record of satisfactory progress in the course. All incomplete requests must be approved by the instructor of the course and a CDM Associate Dean. Only exceptions cases will receive such approval. Information about the Incomplete Grades policy can be found at

<http://www.cdm.depaul.edu/Current%20Students/Pages/Grading-Policies.aspx>

Preferred Name & Gender Pronouns

Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the quarter so that I may make appropriate changes to my records. Please also note that students may choose to identify within the University community with a preferred first name that differs from their legal name and may also update their gender. The preferred first name will appear in University related systems and documents except where the use of the legal name is necessitated or required by University business or legal need. For more information and instructions on how to do so, please see the Student Preferred Name and Gender Policy at <http://policies.depaul.edu/policy/policy.aspx?pid=332>

Students with Disabilities

Students seeking disability-related accommodations are required to register with DePaul's Center for Students with Disabilities (CSD) enabling them to access accommodations and support services to assist with their success. There are two office locations:

- Loop Campus (312) 362-8002
- Lincoln Park Campus (773) 325-1677
- Email: csd@depaul.edu

Students who register with the Center for Students with Disabilities are also invited to contact Dr. Gregory Moorhead, Director of the Center, privately to discuss how he may assist in facilitating the accommodations to be used in a course. This is best

done early in the term. The conversation will remain confidential to the extent possible.

Please see <https://offices.depaul.edu/student-affairs/about/departments/Pages/csd.aspx> for Services and Contact Information.