

# Blockchain Technology and Applications

## CIS 6930 Class Number 11604 Section: 05DD

**Class Periods:** T period 8-9 (3:00 – 4:55), R period 9 (4:05 – 4:55)

**Location:** Online, synchronous

**Academic Term:** Fall 2020

**Final Exam:** n/a

Nota bene: to complete email addresses append @ufl.edu

**Instructor:** Richard Newman

**email:** [nemo](mailto:nemo) – use CIS6930 in subject line

**Phone Number:** 352-283-1083 (text messages OK – *include your name and CIS6930*)

**Office Hours:** TR period 10 (5:00 – 5:50)

**Teaching Assistants:** n/a

### Course Description

*Credits: 3; Special topics course – will cover history of distributed consensus, underlying cryptographic and distributed systems concepts and technology; blockchain technologies, strengths and weaknesses; and blockchain applications.*

**Course Pre-Requisites:** *Assumes knowledge of data structures, networks, and programming chops*

### Course Objectives

Students will study the design and implementation of blockchains, where they came from, and how they can be used. The successful student will be able to describe the elements of a blockchain, explain the underlying technologies, evaluate various applications using blockchains, and build an application based on blockchain technology.

**Materials and Supply Fees:** N/A

### Required Textbooks and Software

- Title: MASTERING BITCOIN
- Author: ANTONOPOULOS
- Publication date and edition: 2017, 2/e (paperback or ebook)
- ISBN: 9781491954386
  
- Title: MASTERING ETHEREUM: BUILDING SMART CONTRACTS AND DAPPS
- Author: ANTONOPOULOS & WOOD
- Publication date and edition: 2018, 1/e (paperback or ebook)
- ISBN: 9781491971949
  
- Software: open software for blockchain

### Recommended Materials

- Title: Blockchain: Blueprint for a New Economy
- Author: Swan
- Publication date and edition: 2015, 1/e (paperback or ebook)
- ISBN: 9781491920497

**CIS 6930 Blockchains**  
**Newman, Fall 2020**

## **Software Use**

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

## **Course Schedule (may be tweaked)**

- Week 1: Introduction - Blockchain basics, Blockchain generations
- Week 2: Transactions, Contracts, Bitcoin implementation
- Week 3: Keys, addresses, wallets, Underlying Cryptographic Mechanisms, Ethereum access
- Week 4: Transactions, Scripting
- Week 5: P2P Networks, Bitcoin network
- Week 6: Bitcoin Blockchain, Mining / Project Proposals
- Week 7: Distributed Consensus
- Week 8: Ethereum transactions
- Week 9: Smart Contracts, EVM
- Week 10: Dapps, Tokens, Oracles
- Week 11: Security
- Week 12: Limitations, Friendly AI
- Week 13: Final Presentations
- Week 14: Final Presentations
- Week 15: Final Presentations
- Week 16: Final Presentations

Detailed assignments are posted on Canvas.

## **Attendance Policy, Class Expectations, and Make-Up Policy**

Attendance will not be taken but attendance and participation are expected. Most weeks early in the term there will be an on-line quiz. The lowest quiz will be dropped.

Questions are encouraged – post your question in the chat box. Try to formulate the question before asking it, and wait to see if it is answered in a few minutes so we can maintain flow.

Lengthy discussions will be deferred to office hours.

You are required to post and present an article from recent research with summary and analysis, and to read and respond online to at least two posts.

Exercises are all to be done on an individual basis, but you are encouraged to discuss both textbook material and projects with others in the class. However, you may NOT share code.

Term projects may be done as a group of up to four students.

Excused absences are consistent with university policies in the undergraduate catalog (<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>) and require appropriate documentation.

**Late submissions:** Quizzes will be closed shortly after their due date and time –the lowest quiz score will be dropped. Projects and exercises will have one point penalty per day or partial day late until they close (usually a week after the due date).

## **University Honesty Policy**

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received

unauthorized aid in doing this assignment.” The Honor Code (<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

**Students Requiring Accommodations**

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://www.dso.ufl.edu/drc>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

**Course Evaluation**

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu/evals>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

**Student Privacy**

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html>

**Assignments**

There will be a quiz most early weeks, a few exercises in programming blockchains, a current research paper presentation and responses, and a term project with preliminary and final presentations. The term project may be done as a group of up to four students. Students are expected to submit a research paper based on their project work. Participation will include an initial homework, and class discussions.

**Evaluation of Grades**

Assignment	Total Points	Percentage of Final Grade
Participation*	20 pts	5%
Current research presentation	10 pts	5%
Quizzes	10 pts each	20%
Exercises	5 pts each	20%
Project	40 pts	40%
Project Presentations (2)	10 pts each	10%
		100%

\* Homework 0 is worth 10 points and counts as class participation.

**Grading Policy**

Percent	Grade	Grade Points
88 - 100	A	4.00
84-88	A-	3.67
80-84	B+	3.33
76-80	B	3.00
72-76	B-	2.67

68-72	C+	2.33
64-68	C	2.00
60-64	C-	1.67
56-60	D+	1.33
52-56	D	1.00
48-52	D-	0.67
0 - 48	E	0.00

More information on UF grading policy may be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

***Campus Resources:***

*Health and Wellness*

**U Matter, We Care:**

If you or a friend is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) or 352 392-1575 so that a team member can reach out to the student.

**Counseling and Wellness Center:** <http://www.counseling.ufl.edu/cwc>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

**Sexual Assault Recovery Services (SARS)**

Student Health Care Center, 392-1161.

**University Police Department** at 392-1111 (or 9-1-1 for emergencies), or

<http://www.police.ufl.edu/>.

*Academic Resources*

**E-learning technical support**, 352-392-4357 (select option 2) or e-mail to [Learning-support@ufl.edu](mailto:Learning-support@ufl.edu).

<https://lss.at.ufl.edu/help.shtml>.

**Career Resource Center**, Reitz Union, 392-1601. Career assistance and counseling. <https://www.crc.ufl.edu/>.

**Library Support**, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

**Teaching Center**, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.

<https://teachingcenter.ufl.edu/>.

**Writing Studio, 302 Tigert Hall**, 846-1138. Help brainstorming, formatting, and writing papers.

<https://writing.ufl.edu/writing-studio/>.

**Student Complaints Campus:** [https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf).

**On-Line Students Complaints:** <http://www.distance.ufl.edu/student-complaint-process>.