

**FIM 590 Blockchain and Cryptocurrencies**  
**Section 003, Fall 2021, 3 credit hours**

**Course Description**

This course explores blockchain technology, mathematics in cryptocurrencies and digital signature, and application of blockchain in cryptocurrencies and other area. Topics to be covered include: Block and Blockchain, Bitcoin, Transaction and Verification, Digital Signature, Elliptic Curve Cryptography, Hash Function Consensus, Power of Work and Mining, Applications.

**Student Learning Outcomes**

By the end of the course, the students should be able to:

1. Master fundamental mathematics behind blockchain and cryptocurrencies;
2. Develop knowledge on Bitcoin network and protocol;
3. Solve the mathematical problems in mining and power of work;
4. Use elliptic curve cryptography for digital signatures and encryption;
5. Verify transactions and signature for cryptocurrencies;
6. Know how to use Blockchain in varies applications.

**Instructor**

**Dr. Tao Pang** - *Instructor*

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**Phone:** 919-513-2110    **Office:** SAS Hall 4116

**Office Hours via Zoom:** Th, 4-5pm or by appointments.

[Zoom Meeting ID: 93186255047 Passcode: 482301]

**Course Structure**

**Lecture**

**Time:** Tu., Th. 11:45am – 1:00pm

**Location:** 461 Riddick Hall

**Textbook**

**Bitcoin, Blockchain, and Cryptoassets: A Comprehensive Introduction**

- Required

**Authors:** Fabian Schar and Aleksander Berentsen

**Edition:** 1st    **ISBN:** 978-0262539166

**Prerequisites:**    Graduate Standing

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## **Grading**

<b>Component</b>	<b>Weight</b>	<b>Details</b>
<b>Homework</b>	<b>20%</b>	Homework assignments will be posted on Moodle.
<b>Tests</b>	<b>30%</b>	Tentative dates: Tu., Sep. 21; Tu., Oct. 26.
<b>Projects</b>	<b>20%</b>	Project assignments will be posted on Moodle.
<b>Final Project</b>	<b>30%</b>	Due 2:30pm, Thursday, Dec. 2, 2021

Note: Test dates are subject to change with appropriate notification.

### **Letter Grades**

**$97 \leq A+ \leq 100$**

**$93 \leq A < 97$**

**$90 \leq A- < 93$**

**$87 \leq B+ < 90$**

**$83 \leq B < 87$**

**$80 \leq B- < 83$**

**$77 \leq C+ < 80$**

**$73 \leq C < 77$**

**$70 \leq C- < 73$**

**$67 \leq D+ < 70$**

**$63 \leq D < 67$**

**$60 \leq D- < 63$**

**$0 \leq F < 60$**

### **Course Schedule (Sections to be covered)**

Week 1:	<b>1.1-1.4</b>
Week 2:	1.5-2.3
Week 3:	2.4-3.2
Week 4:	3.2-4.1
Week 5:	4.2-4.3
Week 6:	<b>Test 1</b> , 4.4
Week 7:	4.5-4.6
Week 8:	<b>Fall Break</b> , 4.7
Week 9:	5.1-5.2
Week 10:	5.3-6.2
Week 11:	<b>Test 2</b> , 6.3
Week 12:	6.4-7.2
Week 13:	7.3-7.4
Week 14:	8.1-8.2
Week 15:	8.3, <b>Thanksgiving</b> .

Note: Schedule are subject to change with appropriate notification.

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### **Student Expenses**

Cost for the required textbook: \$50.00

### **Requirements for Credit-Only (S/U) Grading**

This course cannot be taken for S/U grading; it must be taken for a letter grade.

### **Requirements for Auditors (AU)**

This course cannot be taken as an Audit

### **Polices on Incomplete Grades**

If an extended deadline is not authorized by the Graduate School, an unfinished incomplete grade will automatically change to an F after either (a) the end of the next regular semester in which the student is enrolled (not including summer sessions), or (b) by the end of 12 months if the student is not enrolled, whichever is shorter. Incompletes that change to F will count as an attempted course on transcripts. The burden of fulfilling an incomplete grade is the responsibility of the student. The university policy on incomplete grades is located at <http://policies.ncsu.edu/regulation/reg-02-50-03>. Additional information relative to incomplete grades for graduate students can be found in the Graduate Administrative Handbook in Section 3.18.F at [http://www.fis.ncsu.edu/grad\\_publicns/handbook/](http://www.fis.ncsu.edu/grad_publicns/handbook/)

### **Late Assignments**

Late homework and project assignments may not be accepted or only get at most half credit.

### **Attendance/Absence Policy**

Excused absence needs to be approved in advance. Up to 3 excused absence are allowed. For complete attendance and excused absence policies, please see <http://policies.ncsu.edu/regulation/reg-02-20-03>

### **Makeup Work Policy**

No make-up exams unless there are emergencies during the regular exam times.

### **Academic Integrity**

Students are required to comply with the university policy on academic integrity found in the Code of Student Conduct found at <http://policies.ncsu.edu/policy/pol-11-35-01>. Violations of academic integrity will be handled in accordance with the Student Discipline Procedures (**NCSU REG 11.35.02**).

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### **Accommodations for Disabilities**

Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with the Disability Resource Office at Holmes Hall, Suite 304, 2751 Cates Avenue, Campus Box 7509, 919-515-7653. For more information on NC State's policy on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation (NCSU REG02.20.01) (<https://policies.ncsu.edu/regulation/reg-02-20-01/>).

### **Digital Course Components**

Course materials, including homework assignments, may be posted at the Moodle space for this course. Students may be required to disclose personally identifiable information to other students in the course, via, digital tools, such as email or web-postings, where relevant to the course. Examples include online discussions of class topics, and posting of student coursework. All students are expected to respect the privacy of each other by not sharing or using such information outside the course.

### **Insurance of Course Continuity**

Changes made to the method of instructional delivery, course structure, course schedule, number of assignments, grading or other aspects of the course after the start of the term will be communicated to all students in written via emails and/or announcements through Moodle.

### **Transportation**

Non-scheduled class time for field trips or off campus activities is NOT required.

### **Safety & Risk Assumptions**

N/A

### **Additional NC State Rule and Regulations**

Students are responsible for reviewing the NC State University Policies, Rules, and Regulations (PRRs) which pertain to their course rights and responsibilities, including those referenced both below and above in this syllabus:

- Equal Opportunity and Non-Discrimination Policy Statement <https://policies.ncsu.edu/policy/pol-04-25-05> with additional references at <https://oied.ncsu.edu/divweb/policies/>
  - Code of Student Conduct <https://policies.ncsu.edu/policy/pol-11-35-01>
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