IT4603 INTRODUCTION TO BLOCKCHAIN TECHNOLOGIES
Fall 2022

Meeting Times/Location

Time: Monday 5:00pm-6:15pm
Location: J215B

Contact Information

Name: Dr. Meng Han
Preferred Method of Contact: D2L Email
Email: mhan9@kennesaw.edu * Please use this for emergency only
Phone: 470-578-5801
Office Location: J-302
Email: Please feel free to reach out to me at any time. You can expect a response within 24 hours during business hours.
Office Hours: Monday 10am-12pm, Tuesday 10am-12pm or by appointments. Please feel free to reach out to me.

Email and Classroom Response Time:
Please contact me using **D2L Email** for all course related questions. I will check my D2L Email at least once a day, not including weekends or holidays. During the week, I generally respond to emails within 24 hours. Over the weekend (starting Friday at 4 p.m.) I will respond to emails the next following business day.

Description

This course covers the foundation of IT application and innovation. Topics include but not limited to blockchain and cryptocurrencies, Bitcoin, Ethereum, smart contracts, decentralized applications, machine learning and its applications in the enterprise, security and privacy concerns, operational risks as part of the IT support transformation.

Credit Hours: 3-0-3
Prerequisites: CSE 3153 OR CS 3410

Objectives

Students who complete this course successfully will be able to:

1. Describe the core and novel sources of blockchain technologies, how does it work.
2. Compare critical technology strategies and foundational technologies in blockchain
3. Identify the differences between the most prominent blockchain structure.
4. Describe technologies underlying cryptocurrencies and blockchains.
5. Implement a blockchain, and how to write a "smart contract" in Python/Ethereum.

Materials/Textbooks

Course Website
D2L Brightspace: https://kennesaw.view.usg.edu
- It's important to know how to use this learning management system for: following learning modules, submitting assignments, checking grades and feedback, downloading files, participating discussion boards, etc.
- Please check the course site regularly for important announcements and other issues.

Learning Materials
- **Required Textbook**: **None**.
- Required readings (from different sources) will be assigned in each learning module.

We will heavily depend on class slides, notes, and reading materials, and the following textbooks are recommended:
- **Ethereum: Blockchains, Digital Assets, Smart Contracts, Decentralized Autonomous Organizations** by Henning Diedrich, CreateSpace Independent Publishing Platform, ISBN-13: 978-1523930470.
- **Blockchain Applications: A Hands-on Approach**. by Arshdeep Bahga and Vijay Madisetti, Vpt, ISBN-13: 978-0996025560.

Required Software/Hardware
- Code editor:
  - Visual Studio Code https://code.visualstudio.com (Recommended), or
  - Notepad++: http://notepad-plus-plus.org/
- Other software:
  - Software that can open and/or edit Word, PowerPoint, Excel, PDF, and ZIP files.

Evaluation

Weighted by Percentage:

Grading items	Weight
Group projects	45%
Problem sets and quizzes	40%
Attendance and Participation	15%
Total	100%

Grade Conversion
A: (90-100), B: (80-89), C: (70-79), D: (60-69), F: (0-59)
*** Detailed grading criteria are available in D2L for how Discussions and Projects will be graded. ***

Course Outline

Below is an outline of the course content. Please refer to the D2L calendar for the due dates of assignments.

Week	Topics
Week 1	**Course overview:** • The opportunity to improve the financial system. • Recent developments, major areas, and potential issues • Financial Innovation: Theory, History, Today
Week 2	**Evolution of Blockchain and how bitcoin works** • How and when blockchain/bitcoin started • Milestones on the development of bitcoin • Criticism, ridicule and promise of bitcoin, Sharing economy, Internet of Value
Week 3	**Blockchain Foundation 1**: • Brief history, and goals of cryptography • Symmetric-key cryptography, Public-key cryptography • Digital Signatures, Hash functions
Week 4	**Blockchain Foundation 2**: • Using hash functions to chain blocks • Digital Signatures to sign transactions • Using hash functions for Proof-of-Work
Week 5	**Consensus Mechanisms** • Distributed trust in data • Verifiers – trust, cost and speed • Byzantine agreement • Proof of work and other models
Week 6	**Bitcoin and Other Cryptocurrencies**: • Bitcoin, Ethereum, Other Altcoins • Wallets, Exchange Markets, Payments • Transaction Fees, Anonymity, Mining, Ecosystem
Week 7	**Ethereum and Smart Contracts**: • Ethereum platform • Smart Contracts • Decentralized Applications, DAOs
Week 8	**Project Proposal Presentation**
Week 9	**Ethereum Programming I:** • Algorithmic Decision making • Ethereum protocol • Programing self-executing contracts in Python
Week 10	**Ethereum Programming II:** • Invited Lecture (Industry Speaker)

Week 11	**Smart Contracts and Blockchain Applications I:** • Implementation of Smart Contracts • Description of blockchain projects, Open Discussion
Week 12	**Smart Contracts and Blockchain Applications II:** • Further examples of smart contracts and blockchain applications
Week 13	**Artificial Intelligence and Applications:** • Artificial Intelligence •
Week 14	**Artificial Intelligence and Final Presentations** • Further topics in Artificial Intelligence/Deep Learning
Week 15	**Presentations of Final Projects I**
Week 16	**Presentations of Final Projects II**

Note: the schedule is tentative and subject to change. ALWAYS use the deadline in the D2L course calendar as the accurate deadline for the due items.

Course Policies

Announcement

Important announcements will be made to the class electronically through the D2L Announcements tool. It is important that you check your D2L account regularly for announcements, assignments, and course updates.

Assignments, Quizzes, & Exams Policy

- All assignments MUST be submitted through D2L (https://kennesaw.view.usg.edu/) by the deadline. Email submissions are **NOT** accepted. Any assignment that is less than 24 hours late is subject to 10% penalty. Any assignment that is more than 24 hours late will **NOT** be accepted.
- All quizzes and/or exams MUST be completed on D2L website by the deadline. The quizzes and/or exams can't be opened/submitted after the deadline.
- If you must miss an exam due to illness, you must e-mail or call the instructor before the scheduled time. Failure to notify the instructor prior the scheduled time will produce an automatic zero for the exam. NO makeup test except for emergencies with proof (e.g. doctor's slip).

Discussions

People learn through interactions, to facilitate interactive learning this course will use the Discussions feature in D2L. Discussions will take place in an **asynchronous** manner.

Grading

Grades will be posted in D2L, generally within one week from the due date or submission date whichever is later. Significant assignments such as projects may take longer to grade. If you think there is an error, please make a re-grading request by e-mail within one week of grade posting. A request for reassessment will not be granted if more than two weeks have passed since the grade in question was posted. Please check your grades in D2L regularly.

No "extra credit" work will be given to improve one's grade. Copies of your class work and test will be kept for record.

Assignment Submission Guidelines

All work turned in for this class must meet the submission guidelines presented in the Start Here module. Work that does not meet the submission criteria will not be graded. Scoring rubric will be provided for each assignment.

Attendance

Attendance in classes, laboratories and lectures is important. All students are expected to attend these activities in accordance with their schedule of courses. The instructor determines the attendance policy for each course. All instructors will provide the students, at the beginning of each semester, a clear statement regarding their policies in handling absences. Instructors will also be responsible for advising their students regarding the academic consequences of absences. To view the complete student attendance policy, please visit http://catalog.kennesaw.edu/content.php?catoid=38&navoid=3019#attendancepolicy.

Enrollment Status Statement - Students are solely responsible for managing their enrollment status in a course; nonattendance does not constitute a withdrawal.

Institutional Policies

Federal, BOR, & KSU Course Syllabus Policies

Information contained in the links below constitutes the Federal, BOR, and KSU course syllabus policies and procedures. These policies are updated on the Academic Affairs Website annually.

Academic Affairs - Federal, BOR, & KSU Policies
(http://curriculum.kennesaw.edu/resources/federal_bor_ksu_student_policies.php)

Academic Affairs - KSU Student Resources
(http://curriculum.kennesaw.edu/resources/ksu_student_resources_for_course_syllabus.php)

Academic Integrity Statement

Every KSU student is responsible for upholding the provisions of the Student Code of Conduct, as published in the Undergraduate and Graduate Catalogs. Section 5c of the Student Code of Conduct addresses the university's policy on academic honesty, including provisions regarding plagiarism and cheating, unauthorized access to university materials, misrepresentation/falsification of university records or academic work, malicious removal, retention, or destruction of library materials, malicious/intentional misuse of computer facilities and/or services, and misuse of student identification cards. Incidents of alleged academic misconduct will be handled through the established procedures of the Department of Student Conduct and Academic Integrity (SCAI), which includes either an "informal" resolution by a faculty member, resulting in a grade adjustment, or a formal hearing procedure, which may subject a student to the Code of Conduct's minimum one semester suspension requirement. See also KSU Student Code of Conduct (https://web.kennesaw.edu/scai/content/ksu student-code-conduct).

Confidentiality and Privacy Statement (FERPA)
Kennesaw State University adheres to the Family Educational Rights & Privacy Act of 1974 –
FERPA. See the following link for more information:
http://www.usg.edu/information_technology_handbook/section9/tech/9.5_privacy_and_security

University – Student Rights & Responsibilities

Students of Kennesaw State University are entitled to an environment that is conducive to learning and individual growth. To this end, students enrolling at Kennesaw State University assume a responsibility to abide by the policies and regulations expressed in this section. By doing so, students may fulfill their responsibilities and enjoy the exercise of their own rights while also respecting the rights of others. See http://catalog.kennesaw.edu/content.php?catoid=27&navoid=2263

Ethics Statement
All students are responsible for knowing the information, policies and procedures outlined in the Kennesaw State University Codes of Conduct. The KSU Codes of Conduct include: the general Student Code of Conduct, the Residential Code of Conduct, and the Code of Academic Integrity. Kennesaw State University reserves the right to make changes to this code as necessary and once those changes are posted online, they are in effect. Students are encouraged to check online for the updated versions of all policies. See https://scai.kennesaw.edu/codes.php

Sexual Misconduct Policy
Kennesaw State University is committed to providing programs, activities, and educational environment free from all forms of sex discrimination. For more information click here. KSU issues this statement of policy to inform the community of the University's comprehensive plan addressing sexual misconduct, educational programs, and procedures that address sexual assault, domestic violence, dating violence, and stalking, whether the incident occurs on or off campus. This policy generally covers faculty, students, and staff of the University, as well as third-parties. Third parties include but are not limited to guests, vendors, contractors, retirees, and alumni.
Further information associated with this university policy can be found under sexual misconduct on the Policy Portal website located at: https://policy.kennesaw.edu/

Course Accessibility Statement (ADA statement)

Kennesaw State University provides program accessibility and reasonable accommodations for persons defined as disabled under Section 504 of the Rehabilitation Act of 1973 or the Americans with Disabilities Act of 1990 as amended. Students who require accommodation in facilities, services, programs or activities should contact the Assistant Director for Disabled Student Services to arrange an individual assistance plan. Accommodations may include classroom accessibility, modified computer equipment, disability-accessible parking, assistance with note-taking sign language interpreting or captioning services, class materials in alternate format, library and laboratory assistance, and other accommodations. Determination of appropriate accommodations to be provided will be based upon documentation of the disability. Members of the public who require specific accommodations in facilities, services, programs or activities should contact the office sponsoring the service, program or activity at least five days in advance to arrange individual accommodations. Eligible students deliver certification letters to faculty at the beginning of each semester identifying the accommodations approved for that student. Faculty members are also instructed that they must provide students with special needs appropriate accommodations in a timely manner. The Assistant Director for disAbled Student Support Services will work with faculty members to ensure that students receive appropriate accommodations. A student should notify Disabled Student Support Services in writing within two (2) days of any disagreement between the student and the faculty member if agreed upon academic adjustments are not provided in order to seek a resolution. A student who alleges discrimination on the basis of disability may file a grievance through the University's established grievance procedures. The following have been designated by the President of the University to provide assistance and ensure compliance with the ADA. Should a student require assistance or have further questions about the ADA, please contact either the ADA Compliance Officer for Students at 770-423-6443; the ADA Compliance Officer for Facilities at 470-578-6224; or the Director of Human Resources, ADA Compliance Officer for staff and faculty at 470-578-6030. For more information, go to kennesaw.edu/stu_dev/dsss.

Electronic Communication

The University provides all KSU students with an "official" email account with the address "students.kennesaw.edu" or "kennesaw.view.usg.edu" (in D2L). As a result of federal laws protecting educational information and other data, this is the sole email account you should use to communicate with your instructor or other University officials.

Web Accessibility

Kennesaw State University follows the guidelines of the Universal Design for Learning standard of web accessibility. Faculty use Word, PDF, and HTML formats when communicating electronic information to students whenever possible and appropriate in light of the goals of the course. Faculty are trained to use Web Accessibility Evaluation tools, e.g., WAVE (www.wave.webaim.org), and make adjustments as possible and appropriate in light of the goals of the course.

For free resources available to students on web accessibility, please visit the Web Accessibility Resources page at the Distance Learning Center: http://www.kennesaw.edu/dlc/facultyresources/index.php#

Copyright Law

Kennesaw State University adheres to USG's policy to respect the right of copyright. Holders and comply with copyright laws as set forth in the United States Copyright act. For more information, see the following link to USG's policy: http://www.usg.edu/copyright/

Electronic Recording and Social Media

Electronic recording performed without the consent of the people being recorded chills the free exchange of ideas. Academic freedom, free inquiry, and freedom of expression should not be limited by the fear that one's brainstorming, polemic discourse, speculative inquiry, or any other kind of expressed curiosity made within the space of a university classroom will be made public without one's consent. This fear is unacceptable regardless of whether one is in an online, hybrid, or face-to-face classroom setting. Accordingly, no person shall make public any electronically recorded class discussion without the written permission of the instructor. This policy is not intended to discourage electronic recording in the classroom or the use of social media when such actions are performed with the written consent of the instructor, and others as appropriate. Note: Faculty accommodate all reasonable requests to electronically record a class discussion; these requests must be documented by the Disabled Student Support Services available at: http://www.kennesaw.edu/stu_dev/dsss/prospect.shtml

Additional Items

Minimum Technology Requirements
- This class uses D2L as hosting site. Run a system check to ensure your computer work with D2L. Check out UITS D2L training: http://uits.kennesaw.edu/support/d2ltraining.php
- Internet Connection. A high-speed Internet connection such as DSL or cable Internet access is highly recommended. You can also computer labs on campus to complete the coursework.

Minimum Technical Skills Required

Students entering this course are expected to have following technical skills:
- General computer literacy. Students should be proficient with the basic functions of standard software packages (e.g., MS Word, Excel, PowerPoint, and Adobe Reader) and standard players (e.g., QuickTime, Windows Media Player). A list of primers on many of these technologies is available at https://apps.kennesaw.edu/portal/prod/app_uni_cdoc_publ/documents/

- A working knowledge of the D2L learning management system is required for participation in online courses.

Important Dates
- First Day of Classes:
- Breaks / Holidays:
- Last Day to Withdraw:
- Proctored Exam:
- Last Day of Classes:
- Graduation: