TECH 58100/PHIL 58000A; CRN 21354
Fall 2018
Blockchains, Networks, People: An Intro

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Office Hours: Monday 12:30 – 1:30 pm (and by appointment)

Schedule: Class meets second Thursdays 4:30 to 6:20 pm WANG 4070
Credits: 1, Website: www.purdue.edu/opendigital/courses

1. Overview

This course is designed for graduate students who aim to develop and implement a research study program, particularly in the field of blockchain technology (decentralized ledgers for the secure and private transfer of value or information via internet networks). The course focuses on "open digital innovation" emerging at the interface of network science, information systems, and blockchain technology. Students will learn how to develop a theoretically and practically motivated research question and program for research study. The course emphasizes foundational topical readings in the areas of network science and blockchain technology. Each student will define her or his own research program. The Research Center for Open Digital Innovation (RCODI) at Purdue's Discovery Park offers the possibility of implementing individual research projects following the completion of the course. Students are required to discuss the readings and plan a present a potential research project. No prerequisites.

2. Learning Objectives

Students should use this course to plan and propose a research project related to blockchain technology and network science. In more detail, the learning objectives are as follows:

1) Gain an understanding of the basics of blockchain technology and how it may reconfigure interaction and exchange in social and economic networks
2) Identify relevant theories to study blockchains from a social and economic view (focusing on social and economic network theory)
3) Learn how to read and interpret scientific research papers and lead a research discussion
4) Develop and articulate a theoretically and practically motivated research question

3. Proposed Schedule and Representative Readings (subject to change)

	Date	Readings	Topics
1	Th 8/30	Welcome, Introductions, Blockchain and Network Science Course Overview	
2	Th 9/13	• Nakamoto, S. (2008). Bitcoin: A Peer-to-Peer Electronic Cash System. https://bitcoin.org/bitcoin.pdf.	Blockchain Overview
		• Brandes, U., Robins, G., McCranie, A., and Wasserman, S. (2013). What is network science? *Network Science*. (1):1–15.	Network Science Overview
3	Th 9/27	• Morabito, V. (2017). *Business Innovation Through Blockchain: The B3 Perspective*. Springer. Ch 1: The Blockchain Paradigm: 3-20.	Blockchain Business Applications
		• Jackson, M.O. (2008). *Social and Economic Networks*. Princeton University Press. Ch 1: Introduction to Social and Economic Networks: 17-38.	Social and Economic Networks
4	Th 10/11	• Lin, Y.-P., et. al. (2017). Blockchain: The Evolutionary Next Step for ICT E-Agriculture. *Environments*. 4(50):1-13.	Blockchain and Water ICT
		• Sohn, I. (2017). Small-World and Scale-Free Network Models for IoT Systems. *Mobile Information Systems*. Pp. 1-9.	Small-world and Scale-free Properties
5	Th 10/25	• Kim H., Laskowski, M. (2017). Agriculture on the Blockchain: Sustainable Solutions for Food, Farmers, and Financing. *Blockchain Research Institute*.	Blockchain and Agribusiness
		Sherchan, W., Nepal, S., and Paris, C. (2013). A Survey of Trust in Social Networks. *ACM Computing Surveys (CSUR)*. 45(4): 1-47.	Social Network Trust Theories
6	Th 11/8	• Adjeleian, Prundeanu, Kim. (2018). Breaking the Stagnant Spell: How Blockchain is Disrupting the Solar Energy Industry. *SSRN*. Pp. 1-19.	Blockchain: Energy
		• Orlikowski, W.J. and Scott, S.V. (2015). The algorithm and the crowd: considering the materiality of service innovation. *MISQ*. 39(1): 201-216.	Network Theory Development
7	Th 11/22	No Class: Thanksgiving Beak	
8	Th 12/6	Research Presentations	

4. Grading and Assessment

There are three capabilities for development in this class: 1) analysis of research articles with a matrix template, 2) designing and presenting an individual research project motivated by a theoretical and practical question, and 3) engaging in constructive discussions regarding the material and attending class. These activities will define your grade:

	Deliverable	Percentage
1	Matrix Deliverable (template and examples provided)	40%
	One matrix for each session, due anytime, graded Pass/Fail	
2	Research Project Proposal Presentation (examples provided)	40%
3	Class attendance and participation	20%

No Final Exam: final presentation only

5. Required Books and Readings

There is no required text book for the class. All readings are provided via Blackboard/online.

As background reading, you may wish to consider a fundamental understanding of scientific research. Thus, for those with limited exposure to research methods and fundamentals of scientific research, you may wish to consult a basic book on research in Information Systems, and research in social science and economics, for example

- o Recker (2013) *Scientific Research in Information Systems: A Beginners Guideline*. Springer: Berlin, or

o   http://www.saylor.org/site/textbooks/Principles%20of%20Sociological%20Inquiry.pdf

In the 'resources folder' on blackboard, or upon request, there may be further information about relevant readings and classes that could help you to improve your research skills.

6. Policies
6.1 Course Policy
This is a doctoral-level class, and so you are expected to create an environment that is encouraging and inspiring others to move the innovation landscape forward. The instructor's intention is it to develop your strengths and turn you into a scholar with a deep knowledge in the field: You want to convince your others in the field about your idea and your capabilities. 'You do not just pursue a degree when engaging in a PhD project, but you *become* a PhD.

Students that do not participate in the class reduce the overall value and learning experience of the class. Thus, it is expected that you participate in all classes, and that you prepare yourself for the class. All non-emergency requests to be excused from class need to be submitted *before* the anticipated absence. Use of cell phones and computers in class is acceptable, so long as they do not distract from the learning process. Students are expected to complete the assigned readings before the class, and submit relevant assignments via blackboard.

The instructor will work as closely as possible with the students. Any questions about the course or grades will be responded to via email.

6.2 Academic Dishonesty
Academic dishonesty is rare in classes like this, but it remains prohibited. Please follow the university guidelines with respect to the definition of academic dishonesty: Purdue prohibits "dishonesty in connection with any University activity. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty." [Part 5, Section IIIB-2-a, University Regulations] Furthermore, the University Senate has stipulated that "the commitment of acts of cheating, lying, and deceit in any of their diverse forms (such as the use of substitutes for taking examinations, the use of illegal cribs, plagiarism, and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest." [University Senate Document 72-18, December 15, 1972]

Please refer students to Purdue's student guide for academic integrity for more information: http://www.purdue.edu/odos/aboutodos/academicintegrity.php

6.3 Grief Absence Policy for Students
This class follows the University policy for Grief Absence, below:

Purdue University recognizes that a time of bereavement is very difficult for a student. The University therefore provides the following rights to students facing the loss of a family member through the Grief Absence Policy for Students (GAPS). GAPS Policy: Students will be excused for funeral leave and given the opportunity to earn equivalent credit and to demonstrate evidence of meeting the learning outcomes for misses assignments or assessments in the event of the death

of a member of the student's family.

6.4 Violent Behavior Policy

Purdue University is committed to providing a safe and secure campus environment for members of the university community. Purdue strives to create an educational environment for students and a work environment for employees that promote educational and career goals. Violent Behavior impedes such goals. Therefore, Violent Behavior is prohibited in or on any University Facility or while participating in any university activity.

6.5 Students with Disabilities

Purdue University is required to respond to the needs of the students with disabilities as outlined in both the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 through the provision of auxiliary aids and services that allow a student with a disability to fully access and participate in the programs, services, and activities at Purdue University. If you have a disability that requires special academic accommodation, please make an appointment to speak with me within the first three (3) weeks of the semester in order to discuss any adjustments. It is important that we talk about this at the beginning of the semester. It is the student's responsibility to notify the Disability Resource Center (http://www.purdue.edu/drc) of an impairment/condition that may require accommodations and/or classroom modifications.

6.6 Emergencies

If you have a personal health or other emergency, please contact me via email as soon as possible to develop a plan for successful completion of the course. Most assignments can be submitted through email, and accommodations can be made for other aspects of the class. In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor's control. Relevant changes to this course will be posted onto the course website or can be obtained by contacting the instructors or TAs via email or phone. You are expected to read your @purdue.edu email on a frequent basis.

6.7 Nondiscrimination

Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life. Purdue University prohibits discrimination against any member of the University community on the basis of race, religion, color, sex, age, national origin or ancestry, genetic information, marital status, parental status, sexual orientation, gender identity and expression, disability, or status as a veteran. The University will conduct its programs, services and activities consistent with applicable federal, state and local laws, regulations and orders and in conformance with the procedures and limitations as set forth in Executive Memorandum No. D-1, which provides specific contractual rights and remedies. Any student who believes they have been discriminated against may visit www.purdue.edu/report-hate to submit a complaint to the Office of Institutional Equity. Information may be reported anonymously.

7. Proposed Course Schedule (subject to change)

Semester Week	Date	Agenda
2	Th 8/30	Welcome, Introduction to Blockchain Technology, and Course Overview
4	Th 9/13	Research matrix discussion: blockchain technology and network theory
6	Th 9/27	Research matrix discussion: blockchain technology and network theory
8	Th 10/11	Research matrix discussion: blockchain technology and network theory
10	Th 10/25	Research matrix discussion: blockchain technology and network theory
12	Th 11/8	Research matrix discussion: blockchain technology and network theory
14	Th 11/22	No Class: Thanksgiving Beak
16	Th 12/6	Research Presentations (no finals)