FLORIDA ATLANTIC UNIVERSITY

Course Number: COT 5930/ COT 4930
Course Name: AI, Data Sci, Cybersecurity Ethics
Date: Fall 2024
Building: Virtual/On-line **Room:** Virtual Classroom (Canvas)
4.0 Credit(s)

Instructor Information

Professor Name: Jaya Perez, Ph.D.
Office: Virtual
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Course Description

This course focuses on AI, data science, cybersecurity & engineering ethics against the context of modern and relevant philosophical theories and practical ethical frameworks that help guide cybersecurity professionals and students in their ability to think and act in an ethical manner while assuring the safety & security of computer networks/systems. From a combined AI, data science, cybersecurity and ethics perspective, students will use key principles covered in the course to prepare a final case study of an ethical dilemma within these engineering sectors with solutions for optimal outcomes and practice-based resolution of the dilemma using practical decision-making models examined in the course.

Prerequisites

- Completion of 3 – 4 years of undergraduate engineering curriculum.

Corequisites

n/a

Instructional Method

Fully On-line (Canvas)

Required Texts/Materials

Textbooks

- Coeckelbergh, Mark. AI Ethics. (2020). AI Ethics (The MIT Press Essential Knowledge Series). Boston, MA: The Massachusetts Institute of Technology (MIT) Press.

- Manjikian, Mary. Cybersecurity Ethics: An Introduction. 2nd ed. (2023). Abingdon, Oxon OX: Routledge Press.

Materials

- The Ethics of AI and ML: Ensuring Cybersecurity and Privacy in Automated Decision-making. (2023). SANS Summit. SANS Institute. Retrieved from https://www.youtube.com/watch?v=17J8DBpO4TQ

- State of Ethics & Trust in Technology. Deloitte. Retrieved from chromeextension://efaidnbmnnnibpcajpcglclefindmkaj/https://www2.deloitte.com/content/dam/Deloi tte/us/Documents/us-tte-annual-report-2023.pdf

- Wagner, Alexander. (2016, November). What Really Motivates People to Be Honest in Business. Retrieved from https://www.ted.com/talks/alexander_wagner_what_really_motivates_people_to_be_honest_in_business?language=en Time: 13:29 minutes (Focus on first 7 Minutes only.)

- The Importance of Ethics in Information Security. (26 February 2021). RiskOptics. Retrieved from https://reciprocity.com/the-importance-of-ethics-in-information-security/#:~:text=It's%20the%20knowledge%20of%20right,to%20judge%20these%20matters%20accordingly.

- Modelling the ethical priorities influencing decision-making in cybersecurity contexts. (2023) Retrieved from https://www.emerald.com/insight/content/doi/10.1108/OCJ-09-2022-0015/full/html

- Ethics in cybersecurity research and practice. (November 2020). Kevin Macnish, Jeroen van der Ham**. Technology in Society. Elsevier.** https://www.sciencedirect.com/science/article/pii/S0160791X19306840

- Carucci, Ron. (16 December 2016). Why Ethical People Make Unethical Choices. *Harvard Business Review*, Retrieved from https://hbr.org/2016/12/why-ethical-people-make-unethicalchoices

- Gregerson, Hal. and Bianzino, Nicola Morini. 26 May 2023. AI Can Help You Ask Better Questions and Solve Bigger Problems. Harvard Business Review. https://hbr.org/2023/05/ai-can-help-youask-better-questions-and-solve-bigger-problems

- Haase, S. (2013). An engineering dilemma: Sustainability in the eyes of future technology professionals. Science and Engineering Ethics, 19(3), 893–911.

- Morrison, L.A. Situating Moral Agency: How Postphenomenology Can Benefit Engineering Ethics. *Sci Eng Ethics* **26,** 1377–1401 (2020). Retrieved from https://link.springer.com/article/10.1007/s11948-019-00163-7#citeas

- Walther, J., Miller, S., & Sochacka, N. W. (2017). A model of empathy in engineering as a core skill, practice orientation, and professional way of being. Journal of Engineering Education, 106(1), 123–148.

- The Rise of Ethical Data Science: the Moral Landscape. (3 October 2023). International Association of Business Analytics. Retrieved from https://iabac.org/blog/the-rise-of-ethical-data-science-the-moral-landscape

Course Objectives/Student Learning Outcomes

At the end of this course, students should be able to:

1. Analyze ethical principles that affect decision-making from an engineering, data science, cybersecurity & AI perspective.
2. Identify and analyze key AI, data science, and cybersecurity ethical issues that emerge across a range of industry sectors.
3. Identify AI, data science, and cybersecurity ethical guidelines for practical application.
4. Differentiate between ethical and legal rights & responsibilities specific to AI, data science, cybersecurity, and privacy practices across a range of industries.
5. Apply ethical theories, models, and principles from readings towards ethical analysis in the AI data science, and cybersecurity sector.
6. Develop a framework for resolving AI, data science, and cybersecurity-related ethical dilemmas while assuring trust within key constituencies and effectively managing reputational risk.

Faculty Rights and Responsibilities

Florida Atlantic University respects the rights of instructors to teach and students to learn. Maintenance of these rights requires classroom conditions that do not impede their exercise. To ensure these rights, faculty members have the prerogative to:

• Establish and implement academic standards.

• Establish and enforce reasonable behavior standards in each class.

• Recommend disciplinary action for students whose behavior may be judged as disruptive under the Student Code of Conduct University Regulation 4.007.

Disability Policy

In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register

with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at www.fau.edu/sas/.

Course Evaluation Method

Your grade in the class will be broken into the following components:

- **Lab Exercises:** Weekly Practicum/Discussion Forum Posts – 30%
- **Homework:** Reflective Analysis Papers – 25%
- **Midterm Exam:** Case Study Proposal – 15%
- **Final Exam:** Final Case Study – 30%

Code of Academic Integrity

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see University Regulation 4.001.

Attendance Policy Statement

Students are expected to attend all their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance. Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations, or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances, and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.

Religious Accommodation Policy Statement

In accordance with the rules of the Florida Board of Education and Florida law, students have the right to reasonable accommodations from the University in order to observe religious practices and beliefs regarding admissions, registration, class attendance, and the scheduling of examinations and work assignments. University Regulation 2.007, Religious Observances, sets forth this policy for FAU and may be accessed on the FAU website at www.fau.edu/regulations.

Any student who feels aggrieved regarding religious accommodations may present a grievance to the executive director of The Office of Civil Rights and Title IX. Any such grievances will follow Florida Atlantic University's established grievance procedure regarding alleged discrimination.

Time Commitment Per Credit Hour

For traditionally delivered courses, not less than one (1) hour of classroom or direct faculty instruction each week for fifteen (15) weeks per Fall or Spring semester, and a minimum of two (2) hours of out-of-class student work for each credit hour. Equivalent time and effort are required for Summer Semesters, which usually have a shortened timeframe. Fully Online courses, hybrid, shortened, intensive format courses, and other non-traditional modes of delivery will demonstrate equivalent time and effort.

Course Grading Scale

Letter Grade	Letter Grade
A	94 - 100%
A-	90 - 93%
B+	87 - 89%
B	83 - 86%
B-	80 - 82%
C+	77 - 79%
C	73 - 76%
C-	70 - 72%
D+	67 - 69%
D	63 - 66%
D-	60 - 62%
Letter Grade	**Letter Grade**
F	Below 60

Grade Appeal Process

You may request a review of the final course grade when you believe that one of the following conditions apply:

• There was a computational or recording error in the grading.

• The grading process used non-academic criteria.

• There was a gross violation of the instructor's own grading system.

University Regulation 4.002 of the University Regulations contains information on the grade appeals process

Policy on Make-up Tests, Late work, and Incompletes

Late submissions will not be accepted or graded.

No makeup exams will be offered.

Throughout the semester, multiple homework assignments will be posted via Canvas. For each homework assignment, you will have about a week to complete and submit your solution via Canvas. Allow enough time to submit your work since once the system is closed there will not be other possibilities to submit (don't send your work via email). Please note that the due date for homework assignments will not be updated after the assignment is posted.

Policy on the Recording of Lectures

Students enrolled in this course may record video or audio of class lectures for their own personal educational use. A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach students about a particular subject. Recording class activities other than class lectures, including but not limited to student presentations (whether individually or as part of a group), class discussion (except when incidental to and incorporated within a class lecture), labs, clinical presentations such as patient history, academic exercises involving student participation, test or examination administrations, field trips, and private conversations between students in the class or between a student and the lecturer, is prohibited. Recordings may not be used as a substitute for class participation or class attendance and may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the University's Student Code of Conduct and/or the Code of Academic Integrity.

Counseling and Psychological Services (CAPS) Center

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to http://www.fau.edu/counseling/

Student Support Services and Online Resources

- Center for Learning and Student Success (CLASS)
- Counseling and Psychological Services (CAPS)
- FAU Libraries
- Math Learning Center
- Office of Information Technology Helpdesk
- Center for Global Engagement
- Office of Undergraduate Research and Inquiry (OURI)
- Science Learning Center
- Speaking Center
- Student Accessibility Services
- Student Athlete Success Center (SASC)
- Testing and Certification
- Test Preparation
- University Academic Advising Services
- University Center for Excellence in Writing (UCEW)
- Writing Across the Curriculum (WAC)

Course Topical Outline

I. Defining AI, Data Science, Cybersecurity & Engineering Ethics
II. Decision-Making Models for AI, data science, Cybersecurity and Ethical Decisions
III. Modern Ethics & AI, Data Science, Cybersecurity Dilemmas
IV. Comparing AI, Data Science, and Cybersecurity-based Ethical Outcomes in Different Industries
V. Ethical Decision-Making Model Selection & Application
VI. Ethics & AI, Data Science, Cybersecurity Dilemma Argumentation
VII. Barriers/Solutions to AI, Data Science, Cybersecurity & Ethics Decision-Making
VIII. AI, Data Science, Cybersecurity, Ethics and Justice
IX. AI, Data Science, Cybersecurity Ethical Dilemma Presentation Outcomes and Key Trends

Correlating Ethical Dilemma Case Study Outcomes and Key Trends within the AI, Data Science, Cybersecurity & Technical & Engineering Context

X. Examination Week