UNIVERSITY of NICOSIA

Course Syllabus

Course Code	Course Title	ECTS Credits
COMP-242	Data Privacy and Ethics	6
Prerequisites	**Department**	**Semester**
Sophomore Standing	Computer Science	Spring
Type of Course	**Field**	**Language of Instruction**
Required	Data Science	English
Level of Course	**Lecturer(s)**	**Year of Study**
1st Cycle	Dr Ioanna Dionysiou	2nd
Mode of Delivery	**Work Placement**	**Corequisites**
Face-to-face	N/A	COMP-211

Course Objectives:

The main objectives of the course are to:

- introduce the philosophical framework for analyzing computer ethics
- explore issues such as intellectual property rights, digital divide, and cybercrime
- explore social, moral and ethical challenges arising from social networks and mobile communication technologies
- examine ethics of artificial intelligence and virtualization technologies
- examine privacy threats such as pervasive surveillance, profiling, location analysis, and traffic analysis
- present privacy-by-design concept and principles
- provide students with deep knowledge on state-of-the-art privacy enhancing techniques
- examine the legal context of privacy such as legislations and directives (e.g. general data protection regulation GDPR)
- discuss privacy issues and challenges in various application domains

Learning Outcomes:

After completion of the course students are expected to be able to:

1. distinguish between morality and etiquette, law and the professional code of conduct
2. evaluate professional codes of ethics for the ACM and other organizations
3. discuss patent, copyright and trade secret protection

4. interpret the social context of a particular software/hardware implementation
5. assess the value of ethics in automated decision making
6. discuss ethical issues in online societies
7. explain the privacy threats in network systems and services
8. discuss and explain current privacy enhancing techniques to mitigate privacy threats and risks
9. discuss trade-offs between quality of protection and cost, bandwidth and latency in anonymous communications
10. perform a long-term traffic analysis attack
11. analyze the privacy and ethical challenges for a given application domain
12. discuss the privacy requirements as expressed in legislations such as the GDPR

Course Content:

1. Motivation for Ethics in Computing (with special attention on morality and the law)
2. Ethics and the Professions - Intellectual property rights, software risks/liability, computer crimes
3. Social context of computing and the need for ethics in artificial intelligence and online social network ecosystems
4. Motivation for Data Privacy
5. Engineering privacy, including privacy and data protection principles from legal frameworks
6. Contemporary privacy enhancing techniques in protocols and storage
    a. privacy features of authentication protocols
    b. secure private communications
    c. communications anonymity and pseudonymity
    d. privacy in databases
    e. storage privacy
7. Contemporary privacy enhancing techniques for
    a. respondent privacy
    b. owner privacy
    c. user privacy
8. Legal frameworks for privacy, including GDPR
9. Ethical and privacy issues in various application domains such as biomedics

Learning Activities and Teaching Methods:

Lecture, Individual Work and Case Studies.

Assessment Methods:

Final Exam, Midterm Exam, Assignments and Semester Project.

Required Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Ethics in Computing	Joseph Migga Kizza	Springer International Publishing	2016	978-3-319-29106-2
The Algorithmic Foundations of Differential Privacy (Foundations and Trends in Theoretical Computer Science)	C. Dwork and A. Roth	Now Publishers Inc	2014	978-1601988188
Privacy and Data Protection by Design – from policy to engineering	George Danezis, Josep Domingo-Ferrer, Marit Hansen, Jaap-Henk Hoepman, Daniel Le Métayer, Rodica Tirtea, Stefan Schiffner	European Union Agency for Network and Information Security	2014	978-92-9204-108-3

Recommended Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Data Privacy Law: A Practical Guide (2nd edition)	G.E. Kennedy and L.S.P. Prabhu	Interstice	2017	978-0999512715
Computer Ethics,4th edition	D. Johnson and K. Miller	Pearson	2009	9780131112414