New Trends in Global and Comparative Law:
Transformative Technologies as a Paradigmatic Case

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Syllabus

Course Description

Scientific and technological innovations are reshaping not only our social, political, and economic systems but also the very notion of what it means to be human. This course explores the intersections between emerging transformative technologies and legal frameworks from a comparative and global perspective.
Focusing on three paradigmatic technologies (genetic engineering, neuroscience and brain-computer interfaces, and artificial intelligence) the course examines how law and governance mechanisms are transformed and seek to guide these developments toward human-centered, ethical, and socially responsible outcomes.
Through case studies, comparative legal analysis, and interdisciplinary dialogue, students will explore how different legal systems (European, U.S., Chinese, the international and global dimension) respond to the challenges posed by these technologies, and how constitutional principles and fundamental rights evolve in response to technological disruption.

Learning Objectives

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

- Understand the scientific and ethical foundations of key transformative technologies (such as genetic engineering, neuroscience and BCI, AI)
- Analyze and compare national, international, and global legal frameworks governing these technologies
- Critically evaluate emerging legal concepts such as neuro-rights, human enhancement, AI transparency and accountability, human oversight
- Identify the strenghts and weakness of global constitutionalism (limitating new powers and supporting new fundamental rights) in shaping technology law
- Develop policy or regulatory proposals addressing current and future challenges in technological innovation.
- Apply interdisciplinary and problem-based learning methods to real-world legal-ethical dilemmas.

Course Structure

1. Introduction. The origins: Law, Technology, and the Human

- Overview of technological transformation and the emersion of new ethical and legal principles
- The role of law in regulating technological innovations

2. Genetic Engineering and Human Identity

- Human genome modification: old and new techniques
- Ethical, social, and intergenerational implications
- Finding a new legal framework at global level, between soft law and hard law (France's *Code de la santé publique*, UK's *Human Fertilisation and Embryology Act*, the *Summits on Human Genome Editing*)

3. Neuroscience and the "Law of the Mind"

- Brain-computer interfaces (BCIs): from therapy to cognitive enhancement
- The rise of "neuro-rights": mental privacy, cognitive liberty, integrity
- Case studies: Chile's constitutional amendment; Spain's *Carta de Derechos Digitales*

4. Artificial Intelligence and Human Intelligence

- AI and AIs
- AI and HI: the origins
- AI and its individual and societal impact, between pros and cons
- Sustainability, vulnerability, democracy
- AI: new challenges to Constitutionalism (private powers and new fundamental rights)
- Comparative regulatory models: U.S. (market-driven), China (state-controlled), EU (risk-based)
- From Brussels to the world: the European AI Act and the quest for global AI regulation

5. New Trends in Global and Comparative Law

- Transformative Technologies, Law and Resilience
- Tree Ts for a sustainable regulation of transformative technologies: a Tuned, Timely, Tailored Global Law

Teaching Methods

- Problem-Based Learning (PBL): Students analyze and resolve practical case studies
- Flipped Classroom: Preparatory readings followed by in-class debate
- Learning by Doing (LbD): Drafting legal briefs, policy papers, regulatory proposals
- Interdisciplinary Dialogue: Engagement with insights from science, ethics, and political theory