JAWAHARLAL NEHRU UNIVERSITY
CENTRE FOR THE STUDY OF LAW AND GOVERNANCE
NEW DELHI - 110 067

COURSE OUTLINE

A.	**COURSE TITLE**	Law, Technology and Development
B.	**COURSE TYPE**	Elective Course for MPhil and PhD students, CSLG, JNU
C.	**DURATION**	One Semester
D.	**CREDITS**	**2 CREDITS**
E.	**COURSE TEACHER**	Dr. Nupur Chowdhury, Assistant Professor of Law, CSLG, JNU

F. **DATE** 10/1/2020

G. COURSE OVERVIEW

The course is designed to develop a theoretical framework to explore the relationship between law, technology and development specifically in the context of India. Thus the idea of technology as a political artifact as propounded by Langdon Winner or the theory of the social construction of technology by Wiebe Bijker and Trevor Pinch and its implication for developing an understanding of the material process of regulation of technology, limits to the regulation of technology and will also help in identifying the tools for such regulation. Constitutional law (specifically the preamble, fundamental rights and directive principles of state policy) would allow us to explore the fundamental public values that need to be secured with regard to regulation of technology. Smart regulation and the idea of designing regulatory tools keeping in mind the specific characteristics of the regulatory space. This theoretical framework is useful in informing the selection and design of regulatory tools.

H. COURSE CONTENT

The course will introduce students to formative ideas through basic texts on the nature of technology and the social control over the production and application of technology from STS. This will be followed by a discussion of the nature and content of public values that should guide the regulation of technology. What should be the objective of regulation? How to regulate? When to regulate? Who can regulate? And lastly the question explored is at what administrative level to regulate. Regulations are introduced to secure certain public values. Often public values may not be compatible and could require trade-offs. Tools of regulation are also important especially because there are certain positive and negative implications related to the choice of these tools. Timing of regulation is important because regulators are each time confronted with the Collingridge Dilemma. Regulatory intervention if it is too early may actually limit technological growth and if it is too late may put public interest at risk. Increasing specialization and technological complexity means that public regulators often faced with expertise deficits. From where

should we source expertise? How can private experts be made accountable when they are involved in public regulation? Should technological expertise be given a privileged position within institutions that are involved in public regulation of technology? What is the role of public in such regulatory discussions? Lastly the sites of regulation are explored. In a globalized world, as technologies proliferate, national regulatory architectures often compete to gain multilateral acceptance. Similarly, those jurisdictions with limited regulatory resources may find that they are confronted with technological products that escape their regulatory control. In such circumstances, it is also necessary to pause and reflect on whether the search for regulatory harmonization itself is a mirage that requires ceding of national regulatory control without compensatory and effective international public regulation. Cumulatively these questions are supposed to provide an adequate template for investigating and interrogating the idea of regulation of technology.

The following part focuses on a series of case studies that explicate the theoretical discussions in the first part. Each of these case studies has been chosen because they have attracted considerable public debate. There are competing regulatory objectives like whether to allow for free access to the internet at the cost of not being able to determine which site to access (like in the case of Free Basics) to ensure better public service delivery at the cost of sacrificing privacy (e.g. aadhaar). Case studies on agricultural biotechnology and nuclear technology highlight that risk appetite of developing countries is higher but more pertinently focus on the distribution of the risks and the access to the benefits of such technological developments. Similarly regulation of Assisted Reproductive Technology (ART) attempts to balance the desire to have biological children with what many consider extreme dehumanization of human bodies.

I. TEACHING FORMAT

The course will be based on a seminar format, where students will be asked to read and individually engage with specific texts/readings, followed by discussion in class. Legal practitioners from trade or industry working on a specific technological field may be invited to deliver guest lectures.

J. COURSE OBJECTIVES

- Examine the use of technology for the purpose of regulating human behavior.
- Explore the theoretical challenges faced by law in responding to technological developments.
- Explore Constitutional implications of technological developments.
- Develop an understanding of the manner in which legal frameworks can be adapted to ensure that legitimacy and accountability of technology governance frameworks may be enhanced specifically in the context of India.

K. SYLLABUS:

Teaching Week	Lecture Topic
Unit 1 : Introduction	
Week 1	**Law, Technology and Development** o Chart the inter-sectionality between law, technology and development. Technology poses both a regulatory challenge and a regulatory opportunity. o Technology as a tool of governance o Collingridge Dilemma o Law as constitutive of technology Readings 1. R. Brownsword (2008) Rights, Regulation and the Technological Revolution, Oxford University Press. (Chapter 1) 2. Lawrence Lessig (2006) Code 2.0, Basic. (Introduction) 3. Alex Faulkner (2010) How law makes technoscience, CSSP Working Paper. Class Discussion 1. Profiling the poor – Why are Delhi cops collecting fingerprints of beggars? (HT Dec 2016) 2. Puducherry Govt. Circular on Public Services – Use of Social Media (Jan 2017)
Week 2	**Science, Technology and Society** o Technological Determinism o Social Construction of Technology o Actor Network Theory o Is technology political? Readings 1. Langdon Winner (1986) Do Artifacts have politics? The Whale and the Reactor: a Search for Limits in an Age of High Technology, University of Chicago Press. 2. Bruno Latour (1987) Where Are the Missing Masses? The Sociology of a Few Mundane Artifacts, From Wiebe E. Bijker and John Law, eds., Shaping Technology/Building Society: Studies in Sociotechnical Change, MIT Press. 3. Trevor J Pinch and Wiebe Bijker (1987) The Social Construction of Facts and Artifacts, From Wiebe E. Bijker and John Law, eds., Shaping Technology/Building Society: Studies in Sociotechnical Change, MIT Press. **4.** Sørensen, Knut Holtan. (2004) Cultural politics of technology: Combining critical and constructive interventions?. Science, Technology and Human Values. vol. 29 (2).

Week 3	**Sociology of Risk** o Risk Society o Social Imperative versus Technological Imperative o Human Rights Values in Technology Regulation Readings 1. Ulrich Beck (2006) Living in the World Risk Society, Economy and Society Volume 35 Number 3 August 2006: 329- 345. 2. Gary Chapman (2004) Shaping technology for the 'good life': The technological imperative versus the social imperative, From Douglas Schuler and Peter Day eds., Shaping the network society: The new role of civil society in cyberspace. MIT Press.
Unit 2: Technology and Constitutional Values (Discussion vis-à-vis Case Studies)	
Week 4 & 5	**Personal Liberty and Privacy** o ICT and Public Values o Right to Privacy in the Indian Constitution o Biometric technologies: Aadhaar, DNA, Automated Facial Recognition Systems (AFRS) o Artificial Intelligence Readings 1. G. Sartor (2011) Human Rights in the Information Society: Utopias, Dystopias and Human Values," Philosophical Dimensions of Human Rights, Springer. 2. Nupur Chowdhury (2018) Privacy and Citizenship in India: Exploring Constitutional Morality and Data Privacy, NUJS Law Review, Vol 11, Issue 3 (2018) 3. The Malicious Use of Artificial Intelligence: Forecasting, Prevention and Mitigation (2018) Future of Humanity Institute, University of Oxford; Arizona State University 4. Report of the Group of Experts on Privacy (Chaired by Justice A.P. Shah) (2012) 5. The DNA Technology (Use and Application) Regulation Bill, 2019. 6. Personal Data Protection Bill, 2019 Class Discussion: 1. Does the use of Artificial Intelligence by the State undermine the right to be presumed innocent and right against self incrimination? 2. Are there any limits to the use of crime investigation technologies like cctvs, AFRS, drones, lie-detectors, narcoanalysis or DNA?
Week 6	**Freedom of Speech and Expression** o Public Space versus Private Space o Is Internet a public space?

	○ Tacit Consent ○ Horizontal Application of fundamental Rights ○ FOSE is not absolute – balancing of rights – regulation of unlawful content Readings 1. *Anuradha Bhasin v Union of India (2020): Writ Petition (Civil) No 1031 of 2019, Supreme Court judgment dated 10 January.* On internet restrictions in J & K. 2. TRAI Recommendations on Net Neutrality (2017) 3. Sudhir Krishnaswamy (2007) Horizontal Application of Fundamental Rights and State Action in India" From C. Raj Kumar, ed., Human Rights, Justice and Constitutional Empowerment, OUP. Class Discussion: 1. What does it mean to have a right to internet? What are the core ingredients of such a right? 2. What rights and duties does this entail for the State and residents?
Week 7	**Public Health and Environmental Safety** ○ Transboundary Harm ○ Environmental Safety and Health Risks ○ Scientific Evidence and expertise Readings 1. Han Somsen (2005) Regulating Biotechnology in Global Risk Society – - Regulating Modern Biotechnology in a Global Risk Society, Vossiuspers UvA. 2. Report of the Comptroller and Auditor General of India on Activities of Atomic Energy Regulatory Board for the year ended March 2012 (2012) 3. Technical Expert Committee (Report submitted to SC) in Aruna Rodrigues case (2012) Class Discussion: 1. Can a State which is invested in technology development function simultaneously as a neutral regulator of technology? 2. How do we ensure private experts engaged in public regulation are impartial? Are conflict of interest principles adequate to ensure impartiality?
Week 8	**Informed Consent and Deliberation** ○ Public Accountability ○ Stakeholder Participation ○ Transparency Readings 1. Jurgen Habermas (1970) Technology and Science as Ideology, in Toward a Rational Society, Beacon Press (Chapter 11 – Technology and Science as "Ideology"). 2. F. H. Miller (1998) Health Care Information Technology and Informed Consent:

	Computers and the Doctor-Patient Relationship, Indiana Law Review 31: 1019-1042. 3. Chang, L. Y. C., Zhong, L. Y., and Grabosky, P. N. (2016) Citizen co-production of cyber security: Self-help, vigilantes, and cybercrime. Regulation & Governance, doi: 10.1111/rego.12125. Class Discussion: 1. Who is a stakeholder in regulatory decisions vis-à-vis technology? 2. What are the transparency conditions necessary to ensure that legislation and policy decisions are taken in the public interest? 3. Should policymakers also consider the unequal distribution of risks and benefits of technology as an important consideration while taking decisions on siting of projects?
Week 9	**Democracy and other fundamental values** Readings 1. Will Democracy Survive Big Data and Artificial Intelligence? - Scientific American 2. Karen Yeung (2018) Algorithmic regulation: A critical interrogation, Regulation & Governance (2018) 12, 505–523. 3. Report of the Artificial Intelligence Task Force (2018) Government of India Class Discussion: 1. Is there any mechanism which allows us to assess the long term impact of adopting technologies vis-à-vis the fundamental Constitutional values? 2. What are the regulatory changes required to ensure "free and fair" elections in the age of the influence of social media?
Unit 3: Theoretical Explorations	
Week 10	**Idea of Expertise** o Technology complexity and expertise deficits in regulation o Sourcing Expertise o Accountability of private experts o Privileged position of technical experts in public regulation o Scientific Expertise in legal trials Readings 1. Moore A and J Stilgoe (2009) Experts and anecdotes: The role of "anecdotal evidence" in public scientific controversies. Science, Technology and Human Values, 34(5): 654–677. 2. Kerr, A., Cunningham-Burley, S., & Tutton, R. (2007). Shifting subject positions: Experts and lay people in public dialogue. Social Studies of Science, 37(3), 385–411. 3. R.P. Hagendijk (2004) The Public Understanding of Science and Public Participation in Regulated Worlds, Minerva, 42: 41–59. 4. Sheila Jasanoff (2015) Serviceable Truths: Science for Action in Law and Policy, Texas

	Law Review, 93:1723. 5. Sheila Jasanoff (2003) Technologies of Humility: Citizen Participation in Governing Science, Minerva, Vol 41, 223-244. 6. Helene Sorgner (2016) Challenging Expertise: Paul Feyerabend vs. Harry Collins & Robert Evans on Democracy, Public Participation, and Scientific Authority, Studies in History and Philosophy of Science, 57: 114-120. 7. B. Barnes (2005) The Credibility of Scientific Expertise in a Culture of Suspicion, Interdisciplinary Science Reviews, 30(1): 11–18. 8. Roopali Phadke (2005) People's Science in Action: The Politics of Protest and Knowledge Brokering in India, Society and Natural Resources, 18:363-375.
Week 11	**Legal Design and Regulatory Tools** o Design of Rules – How precise should rules be in capturing technological developments? o Regulatory Tools – voluntary self regulation to command and control – is there a generic toolkit for technologies? Readings 1. Colin S. Diver (1983) The Optimal Precision of Administrative Rules, Yale Law Journal 93: 65-74. 2. N Gunningham & P Grabosky (1998) Smart Regulation: Designing Environmental Policy, Oxford University Press. (Chapter 2 – Varieties of Regulatory Instruments). 3. R. Brownsword (2008) Rights, Regulation and the Technological Revolution, Oxford University Press (Chapter 5 – The Challenge of Regulatory Effectiveness).
Week 12	**Sites of Regulation (Challenge of regulability!)** o Technologies often escape jurisdictional control o Globalization and regulation of technology o Regulatory partnership or regulatory parasite Readings 1. DE Winickoff and DM Bushey (2010) Science and power in global food regulation: The Rise of the Codex Alimentarius. Science, Technology, & Human Values 35(3): 356–381. 2. 59th Report of the Parliamentary Standing Committee on functioning of the CDSCO – Rajya Sabha
Week 13	**Science and Technology in India** o State as a technology developer o State patronage of science and technology Readings 1. Irfan S. Habib and Dhruv Raina (1989) Copernicus, Colombus, Colonialism and the

	Role of Science in Nineteenth Century India, Social Scientist Mar 1:51-66. 2. Shiv Visvanathan (2009) The Search for Cognitive Justice, Seminar. 3. Romila Thapar *et al.* (2015) The Public Intellectual in India (Aleph) – (Science and Democracy – Dhruv Raina).
Unit 4: Concluding Session	
Week 14	**Concluding Class** o Charting a future research agenda on Law, Technology and Development

L. SCHEME OF ASSESSMENT

Sl. No.	**Components**	**Max. Marks**
1.	Case Study – Technology and Public Values	30
2.	Case Study Presentation	10
3.	Class Participation	10
4.	Examination – End of Term	50
	TOTAL	**100**