

Centre for Studies in Science Policy

School of Social Sciences

Optional course (undergraduate level)

(Winter semester: January - May)

Course Title	Science, Technology and Society Interactions
Course no.	SP-201 P
Faculty In-charge	Dr. Madhav Govind
Mode of Instruction	Participative class room lectures
Credit	3
Mode of Evaluation	Term Paper, End Semester Examination & Class Participation (1 credit each)

Introduction:

Science and technology have become all pervasive force influencing almost every aspect of our daily life. The present course aims to focus on the increasing complexities of the interrelationship between science, technology and society. Science and technology policy of twenty-first century is faced by challenges like emerging technology, globalization and environmental movement.

Some of the notions like objectivity, rationality, skepticism, systematic investigation, scientific temper require an understanding of how science emerged as a social institution, what role S&T plays in our society and how socioeconomic structure influence the character of modern science. This course will familiarize undergraduate students about the basic concepts and perspectives on science and technology and explore the emergence and growth of modern science and technology in India. The course will discuss issues concerning both functional and dysfunctional aspects of the impact of science and technology on society and vice-versa.

This course consists of two parts: The part one deals with basic concepts and perspectives on science and technology and second part focuses on science and technology in India.

Course Outline:

Part-1-Basic Concepts and Perspectives:

- **Concept of Science:** Nature of scientific knowledge. Scientific method, demarcation between science and non science, Critique of modern science: scientific temper vs. humanistic temper.
- **Emergence of modern science:** Role of Scientists. Institutionalisation and professionalisation of science.

- **Science, Technology and Culture**
- **Science, Technological Change and Development**
- **Science and Politics**
- **Public Understanding of Science and Technology.**
- **Science and Religion**
- **Science and Ethics & Social Responsibility**

Part-2. Science and Technology in India

- **Development of Science in India:** Pre-colonial Science; Colonial science and response of Indian Scientists; Origin and growth of scientific institutions and societies in India.
- **Science in Post- Independent India:** Role of political and scientific elites in the development of Science and Technology, Emergence of Scientific community in India
- **Structure of Scientific Research & Development Organizations**
- **Evolution of S&T Policy**
- **Science and Technology in Globalized world:** Challenges and opportunities of emerging technologies like Information technology and Bio-technology. TRIPS; Patent Laws and Indigenous Knowledge. Consequences and Implications.

Essential Reading Lists

- Barber, Bernard (1953.) *Science and Social Order*. London: George Allen & Unwin. Chapter 1 “The Nature of Science: The Place of Rationality in Human Society” pp.7-22. Chapter X , “The social Control of Science”. pp.207-237.
- Ben-David, Joseph, (1965), *The Scientists Role in Society: a comparative study*. Englewood Cliff, Print ice-Hall.
- Campbell, Norman, (1952). *What is Science?* London: Dover.
- Crother, T.G. (1967) *Science in Modern Society*. Boston: The Cresset Press
- Desai, Pranav N.(2005) “Challenges of Agro-Biotechnologies, Intellectual Property Rights and Globalization” , *Asian Biotechnology and Development Review*, Vol.7.(2)
- Gailard, J., Krishna, V.V. and Waast, (1997), *Scientific Communities in the Developing Countries*. New Delhi: Sage Publication. Chapter1& 3
- Haldane, J.B.S., (1965) *Science and Indian Culture*.Culcutta.New Age Publisher
- Kothari, D.S. (1974) *Science and Man*, Newdelhi: Indian Publication.
- Kumar, Deepak (1995), *Science and the Raj 1857-1905*, NewDelhi, Oxford Uni,Press

Merton, Robert K. (1968). *Social Theory and Social Structure*. New Delhi: Amerind Publication. Chapter XVII, "Science and the social Order" pp. 591-603., Chapter, XVIII "Democratic Social Structure and Science". Pp.604-615.

Mack, Arien (ed.) (1997). *Technology and the Rest of Culture*. Columbus; Ohio University Press. Chapter.2, "Social Context of Technology" pp.5-24. Chapter, 11, "Technology and Culture" pp. 177-184.

Nandy, Ashis(ed.) (1988). *Science, Hegemony and Violence: A Requiem for Modernity*, Tokyo: Tokyo University Press.

Patnaik, Binay Kumar (1992). *The Scientific Temper: An Empirical Study*. Jaipur: Rawat Publication

Rose, Hilary and Rose, Steven (1977) *Science and Society*. Harmondsworth: Penguin Books.

Snow, C.P. (1969), *Two Culture: A Second Look*. London: Cambridge University Press.

Optional Reading Lists:

Abrol, Dinesh(2004)"Science and Technology: Current Imperatives." *Social Scientists*, 32(7-8):76-84.

Adams, Robert McC (1997) "Social Context of Technology" in Mack, Arien(ed) *Technology and the Rest of Culture*. Columbus: Ohio University Press, 5-22.

Adhikari, Kamini, (1987) "Science Society and The Indian Transformation," *Philosophy and Social Action*, Vol.XII, no.1-4, pp33-56.

Avinish(2004) "Science and Society: What Kind of Mediation?" *Economic & Political Weekly* 39(6) 7-13 Feb.538-40.

Barnes, B. (1982) "The Science- Technology relationship: A model and query". *Social Studies of Science*.12:166-172.

Ben-Yehuda, Nachman (1985), *Deviant Science*. Chicago: Chicago Uni. Press

Bernal, J.D. (1948), *The Social Function of Science*. London: George and Rutledge

Bhattacharya, Subrata (1998) Post- independent India Society and Science: An appraisal, analysis and outlook. *IASSI. Quarterly*. 17(2), (Oct-Dec):65-75.

Biswas, S.K. 2000 "Do Science and technology have a future in India". *MAINSTREAM, annual* (23 December) :103-104.

Bronowski, J. (1956) *Science and Human Values*, New York: Harper Torch Books

Bush, Vannevar (1945), *Science: Endless Frontier*, Washington. Public Affairs Press.

- Chattopadhyay, D.P. (ed) (1982) *Studies in the History of Science in India*, New Delhi: Editorial Enterprises.
- Chattopadhyaya, D.P. (2000), Science Values and Ethics” *Science and Culture*. Vol, 66, no. 3-4. pp 101-109.
- Conant, James B. (1954). *Modern Science and Modern Man*. New York: Columbia University Press.
- Desai, Pranav N. (1997) *Science, Technology and International Co-operation*. New Delhi: Har-Anand.
- Finocchiaro, Maurice A. (1988). Science and Society in Newton and in Marx. *INQUIRY*, 31(1):103-122.
- Goonatilke, Susantha, (1999) *Towards a Global Science: Mining Civilizational Knowledge*. New Delhi: Vistaar Pub.
- Irwin, Allan & Wyne, Brian (ed.) (1996) *Misunderstanding science ? The Public*
- Jagtenberg, Tom (1983). *The Social Construction of Science : A Comparative Study of Global Direction of Research , Evolution and Legitimation*. Dordrecht; D. Reidel Publication. Chapter 2 “What is science”. pp 12-40.
- Migration in the Context of Brain Gain & Brain Drain in India’. *Science, Technology & Society*, 2(2). PP. 347-89.
- Krishna, V.V. (2001). “Reflection on the Changing Status of Academic Science in India”. *INTERNATIONAL SOCIAL SCIENCE JOURNAL* 169 (June) 231-246.
- Mashelker, R.A. (2004) “National Building through Science and Technology: A Developing World Perspectives”. *Man & Development*. 26(3) September 27-46.
- Merton, R.K. (1970) *Sociology of Science*. New York: Harper and Row.
- Minsky, Marvin (1997) “Technology and Culture” in Mack, Arien (ed.) *Technology and the Rest of Culture*. Columbus: Ohio University Press, 177-184.
- Oberai, J.P.S. (1979) *Science and Culture*. New Delhi: Oxford University Press.
- Paisley, William J. (1998) ‘ Scientific Literacy and the Competition for Public Attention and Understanding’. *Science Communication* Vol. 20. No.1 PP. 70-80
- Pal, Yash (1996) “ Science in Culture and the Good Society.’ *MAINSTREAM Annual* (December, 14):15-19.
- Polanyi, Michael (1969.) “Growth of Science in Society”. *Minerva*, Vol. 5(4)

Singh, Baldev (ed.) (1986) *Jawaharlal Nehru on Science*. New Delhi: Nehru Memorial Museum and library.

Visvanathan, Shiv (1997) *Carnival for Science Essays on Science, Technology and Development*. Delhi: Oxford University Press. Chapter 1, "A carnival for Science" .pp1-14, Chapter 4, Modern Medicine and its Non-Modern Critics: A Study in Discourse. pp 94-145.

Ziman,J. M.(1968), *Public Knowledge: An Essay Concerning the Social Dimension of Science* ,Cambridge: Cambridge Uni. Press.

