Science, Technology and International Development: Indian Experience

Science and technology (S&T) are not only the most important factors of development but have become partners in the progress of our daily lives. S&T influences and shapes our society as much as the society influences S&T institutions. Our health, well-being, material wealth, comforts, leisure, communication and our livelihood, in a large measure, is dependent on advances in science and technology fields. However, S&T institutions are not necessarily value neutral and rationalizing elements in international development but are also sites of hegemony, power and resistance in our society. Hence any perspective and understanding of development must be located at the interface between science, technology and society. The seminar course on science, technology and international development is designed to provide students with an interdisciplinary understanding of the historical, sociological, political and policy aspects of science and technology in the process of development. The course will combine both theoretical and empirical perspectives towards understanding the role of S&T in development.

The course is focused on Indian experience but could be relevant to a number of developing countries in the global south. Modern science and technology in India, as in other non-western countries of Asia, Africa and Latin America, emerged and institutionalized as part of the colonization process from 17th Century onwards. Hence the course will begin with an historical understanding of the role played by S&T in shaping our society. The course progresses in three parts.

The Part One will be devoted to the rise of modern science and technology in India during the colonial era. Some of the main themes, which will be covered in this segment are: the transfer and exchange of scientific and technological knowledge between the West and India; role of various institutions and actors; the nature and character of development; impact of Western S&T on local and indigenous knowledge; and Indian response to colonial patterns of S&T for development.

The Part Two will deal with post-colonial or independent India. Various themes covered in this segment are: role of leadership with particular reference to India’s first Prime Minister, Jawaharlal Nehru’s vision of development versus Gandhian socio-economic model; role of S&T institutions in building modern India; ‘Green’, ‘White’ and ‘Blue’ revolutions in social transformation; S&T education, gender and development; science, technology and environment; and science and democracy with special reference to the rise of science and technology movements.
The Part Three will explore the contemporary era of the impact of globalization on science, technology and development. Various themes that will be covered in this part are: the role of ICT revolutions and development; Global regimes and globalization of innovation; ethics, regulation and GM technologies; globalization, inequality and development; and inclusive innovation and ‘re-inventing Gandhian model’.

This is a 500 level seminar class intended for final year undergraduate IDS students. The class will be run like a graduate seminar and will require student participation. The course is intended to enhance the writing and presentation skills. Students will be expected to come prepared after reading course material intended for different class sessions.

**Grading**

The grades will be determined in the following way:

- Attendance: 10%
- Note on the reading: 20%
- Presentation and Class Participation: 20%
- Term paper: 50%

**Classroom Format**

The class meets once a week for three hours. Normally most classes consist of a lecture, student presentation and discussion with active participation of students. Attendance is important and will be taken into account in evaluation.

**Note on Reading:** Students will sign up or assigned to pick readings (for books 2 or 3 students could share) for presentation in the class. These presentations will be around 10 to 15 minutes followed by discussion in the class. Students will be encouraged to use power point or use blackboard as they wish to do.

**Presentation and Class Participation:** The class will require student participation. Normally students (except those assigned for presentation) are expected to have completed the readings prior to class. Students are expected to come prepared with relevant questions to be raised for discussion and put forward their ideas and views on the subject or theme.

**Term paper:** This is a research paper of about 4000 words (12-13 pages double space typed not including references). The paper should address any of the issues and themes related to science, technology and development. The choice of topic for the paper will depend on the specific interest of the students. The paper may be flexible to cover India or other countries or even general themes/issues covered or not covered in the class. However, they will have to be within the broad framework of science, technology and development issues. The term paper will be presented to the entire class (through power points) towards the end of November 2016.
Note: Reading list is under preparation and will be made available at a later stage.
Reading List

Introductory Session


Part1


Chakrabarti, Pratik (2004) *Western Science in Modern India: Metropolitan Methods, Colonial Practices*, Delhi: Permanent Black (Chapter 1 Science and the Trajectories of Indian Modernity; and Chapter 2 Orienting Science: The West in India)


Kumar, Deepak *Science and the Raj: 1857-1905*, New Delhi: Oxford University Press (Chapter 1 Science in a Colony: Concepts and Contours; Chapter 2 Exploration and Encounter: The Early Phase; Chapter 4 Science and Education)

Part 2


Baldev Singh 1988), Jawaharlal Nehru on Science and Society: A Collection of his Writings and Speeches, New Delhi: Nehru Memorial Museum and Library

Benjamin Zachariah (2005), Developing an Intellectual and Social History of India (Chapter 4 on The Debate on Gandhian Ideas), New Delhi: Oxford University Press


Dutz, A Mark, Unleashing India's Innovation: Towards Sustainable and Inclusive Growth (Chapter 4 Promoting Inclusive Innovation; Chapter 5 Strengthening Skills and Education for Innovation)

Itty Abraham, The Ambivalence of Nuclear Histories, Osiris, Vol. 21, No.1


**Part 3**

AnnaLee Saxenian (2006) *The New Argonauts: Regional Advantage in a Global Economy* (Chapters 4 and 5 on Taiwan; Chapter 6 on China; and Chapter 7 on India)

Aihwa Ong (2010) *Asian Biotech: Ethics and Communities of Fate* (‘Introduction: An Analytics of Biotechnology and Ethics at Multiple Scales’; and Chapter on ‘ Lifelines: The Ethics of Blood Banking for Family and Beyond)


**Websites**

(Honey bee Network website on grassroots innovations)

(Website on inclusive innovation/grassroots innovation)