

## **Proposed outline for course on *Introduction to Science Technology Society Environment Education***

**Starting on 26th August, 2016 – Fridays at 11:30 am**

### **Reading course (2 credits)**

The proposed course will have three units. Unit I will be an introduction to perspectives in science and society and will comprise literature from Science Technology and Society studies and philosophy of science. The objective is to introduce students to debates on the relationship between science, technology and society as well as public understanding of science. Readings will also have a focus on STS debates in India. Unit II will introduce students to the broad currents of research in STSE education. Students will read and discuss review papers in the area. Unit III will involve reading and discussion around a few empirical studies in socioscientific issues with a specific focus on methodological approaches used in these studies. The objective is to familiarize students with the kind of tools used and analytical approaches employed when conducting research on socioscientific issues.

**Requirements:** Students are expected to read all the readings and contribute to discussions.

**Assessment:** Mostly continuous. Participants will be assessed based on how well they contribute to discussions. They will be asked to lead discussions of specific readings. There will be one term paper, on which they will be graded.

### **Unit I**

#### **Perspectives on Science, technology and society**

#### **References**

Kitcher, P. (2003). *Science, truth, and democracy*. Oxford University Press. (chapter 1, Unacceptable images)

Sismondo, S. (2010). *An introduction to science and technology studies* (Vol. 1). Chichester: Wiley-Blackwell. (Chapter 1, *The Prehistory of Science and Technology Studies* and chapter 15, *The Public Understanding of Science* )

(or)

Jasanoff, S., Markle, G. E., Peterson, J. C., & Pinch, T. (Eds.). (2001). *Handbook of science and technology studies*. Sage publications.

Okasha, S. (2002). *Philosophy of science: A very short introduction* (Vol. 67). Oxford Paperbacks.(chapter 7, *Science and its critics*)

Allchin, D. (2001). Values in science: An educational perspective. In *Science education and culture* (pp. 185-196). Springer Netherlands.

Chadha, G. (2005). Towards an informed science criticism: The debate on science in postcolonial India. In K. Ganesh, & U. Thakkar (Eds), *Culture and the making of identity in contemporary India* (pp. 247–258). New Delhi: SAGE Publications.

Nanda, M. (1997). *Against social de (con) struction of science: Cautionary tales from the third*

world. *Monthly Review*, 48(10), 1.

## **Unit II**

### **Introduction to STSE education**

Pedretti, E., & Nazir, J. (2011). Currents in STSE education: Mapping a complex field, 40 years on. *Science education*, 95(4), 601-626.

Levinson, R. (2007). Towards a pedagogical framework for the teaching of controversial socio-scientific issues to secondary school students in the age range 14-19. (chapter 2, Curriculum, science and society)

Hodson, D. (2003). Time for action: Science education for an alternative future. *International Journal of Science Education*, 25(6), 645-670.

Hodson, D. (2011). Confronting Socioscientific Issues. In *Looking to the Future* (pp. 33-70). SensePublishers. (can be done in two parts)

Aikenhead, G. S., & Ryan, A. G. (1992). The Development of a New Instrument: 'Views on Science—Technology—Society' (*Science Education*, 76(5), 477-491.

## **Unit III**

### **Studies on socioscientific issues**

Sadler, T. D., Barab, S. A., & Scott, B. (2007). What do students gain by engaging in socioscientific inquiry?. *Research in Science Education*, 37(4), 371-391.

Sadler, T. D. (2004). Informal reasoning regarding socioscientific issues: A critical review of research. *Journal of research in science teaching*, 41(5), 513-536.

Levinson, R. (2006). Towards a theoretical framework for teaching controversial socio-scientific issues. *International Journal of Science Education*, 28(10), 1201-1224.

Albe, V. (2008). When scientific knowledge, daily life experience, epistemological and social considerations intersect: Students' argumentation in group discussions on a socio-scientific issue. *Research in Science Education*, 38(1), 67-90.

Kolsto, S. D. (2006). Patterns in students' argumentation confronted with a risk-focused socio-scientific issue. *International Journal of Science Education*, 28(14), 1689-1716.

Lewis, J., & Leach, J. (2006). Discussion of socio-scientific issues: The role of science knowledge. *International Journal of Science Education*, 28(11), 1267-1287.