

Semester	AUG 2022
Open to semester	7,11,13,21
Course code	SE4123/SE6123
Course title	Science and the world
Credits	3 /3
Course Coordinator & participating faculty (if any)	Anirban Hazra, Bhas Bapat*, Joy Monteiro
Nature of Course	Lectures
Pre-requisites	NIL
Objectives (goals, type of students for whom useful, outcome etc)	<p>The teaching of science is often impersonal and bereft of a social connect. The absence of the human angle in the teaching of science can make a scientific concept difficult for students to relate to and appreciate its importance. In this course we will examine some cases of the interaction of science and the world with a view to making the teaching more relatable to the student of science, and placing the cases in the context of the times the concepts grew in.</p>
Course contents (details of topics /sections with no. of lectures for each)	<p>Science is often seen as an isolated intellectual endeavour, disconnected from society, politics and economics. However, an examination of the history of developments in science shows that this is not true. Just as the effects of scientific advances percolate to society, socio-economic and political factors also influence the growth of science. This course will begin by looking at early attempts of humans to understand nature, and activities such as agriculture in the early times and manufacturing later on, which drove intellectual pursuits aimed at understanding natural phenomena and using them for the benefit of mankind. Based on a few case studies the course will look into the academic development of some ideas and their multi-faceted interaction with society.</p> <p>Each case study will be anchored around the following points.</p> <ol style="list-style-type: none"> 1. The progression of academic or scientific

	<p>ideas that led to the discovery.</p> <ol style="list-style-type: none"> 2. Prevalent social, economic and political conditions which might have influenced or engendered the invention or the discovery. 3. Technological developments which led to widespread application and implementation of the ideas. 4. Social political and economic changes brought about by adoption of the technology or the applications of the discovery or invention. The need to re-examine or refine the scientific wisdom that led to the idea, forced by the implementation of the technology or the idea. <p>There will be three case studies.</p> <ol style="list-style-type: none"> 1. Industrial production of ammonia 2. Electromagnetic Radiation 3. Climate Change <p>Lectures</p> <p>4–5 introductory lectures focusing on the growth of civilisation up to the scientific and industrial and revolutions.</p> <p>Followed by the case studies with 7–8 lectures per case.</p> <p>2 lectures for summary and closing remarks.</p>
<p>Evaluation /assessment</p>	<p>End-Sem Examination-40%</p> <p>Mid-Sem Examination-%</p> <p>Others-Term Paper comprising</p> <p>A preliminary proposal/ presentation [10 marks]</p> <p>A final written proposal at the mid-sem in the form of a lesson plan [20 marks]</p> <p>Term paper submitted at the end of the semester [30 marks]%</p>
<p>Suggested readings (with full list of authors, publisher, year, edn etc.)</p>	<ol style="list-style-type: none"> 1. Enriching the Earth by Vaclav Smil 2. Science in History by J D Bernal 3. The discovery of global warming by Spencer Weart 4. The Warming papers edited by David Archer and Raymond Pierrehumbert