

**Centre for Studies in Science Policy
School of Social Sciences**

Course Title	:	Economics of Technological Change and Innovation Systems
Course No. & Type	:	SP 606 (M.Phil./Ph.D.) Optional
Faculty in charge	:	S.Bhaduri & VV Krishna
Mode of Evaluation	:	1. Term Paper (40%) 2. Class Seminar Presentation (30%) 3. Book Review (30%)
Credits	:	4
Instruction Method	:	Lecture-cum-Seminar

Introduction:

This course is designed to provide a broad understanding of the various strands in the literature on technology and technological change to an interdisciplinary audience. Technological change and the consequent gain in productivity have been identified as an integral feature of economic growth and development. The search for an adequate theoretical understanding of technological change has occupied a central position in the social science research for several decades. Although primarily a domain of economists, this area has seen increasing participation of scholars from other related disciplines like management, S&T studies and sociologists. While the management scholars have paid more attention towards organizational dimensions within a firm, S&T scholars and sociologists have emphasized on the role of network between firms, industries and other related agents of innovation. Economics as a discipline has also undergone changes to incorporate factors like firm level diversity, routines and coordination as important driving force behind the creation of knowledge and innovation. This course aims at introducing the students with this strong multidisciplinary character of the issue of technological change from firm, industry as well as a systemic perspective.

Course Outline:

A. Concepts of Technological Change in Classical Economics

Ideas developed by Adam Smith, Joseph Schumpeter and Karl Marx

B. Technology and Technological Change in Neoclassical Economics:

1. Production function, productivities, elasticity of substitution

2. Technological change, types of technological change, technological progress: total factor productivity growth.

3. R&D and knowledge production function: difference between production of knowledge and production of commodity (with respect to appropriability, risk & uncertainty, returns to scale)

C. Technological Change and Innovation in Evolutionary Economics

1. Firm level diversity, inertia and incremental innovation, firm level routine
2. Resource, Capability and technological change
3. Bounded rationality and its Implication
4. Path dependency in technological change
5. “Evolution” in economics of technological change, concept of co-evolution
6. Theories of technology generation in less developed economies.

D. Entrepreneurship and Firm level Innovation

1. Various dimensions and definitions of entrepreneurship (Schumpeter, Kirzner, Knight)
2. Education, past experiences and entrepreneurship
3. Cognitive dimension of entrepreneurship: the notion of cognitive frame and cognitive leadership
4. Entrepreneurship and S&T Policy

E. Innovation Perspective at the macro level:

1. National System of Innovation and its components; linking different actors and agencies in the innovation system; role of institutional and organizational innovation exploring industrial districts and industrial clusters technical change and innovation in the small and medium scale enterprises; linking formal institution in rural innovation system; role of tacit knowledge.
2. Networking and coupling science, technology and market poles as an innovation strategy at the level of science agencies/ specialized sectors, fields, industries etc.

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