

Semester	AUG 2022
Open to semester	7,11,13,21
Course code	SE4113/SE6113
Course title	The Cognitive Basis of Science
Credits	3 /3
Course Coordinator & participating faculty (if any)	Nagarjuna G
Nature of Course	Lectures
Pre-requisites	NIL
Objectives (goals, type of students for whom useful, outcome etc)	<p>The course aims to introduce the theoretical foundations of science education practices, within the broader framework of modelling learning/cognition.</p> <p>The course will be useful to senior undergraduates of all science disciplines, particularly those who have an interest in education.</p>
Course contents (details of topics /sections with no. of lectures for each)	<p>The course provides a general introduction to the developments in cognitive science, and what do they tell us about learning in general and learning science in particular. The course engagement deals with topics in philosophy of science and cognitive science with an explicit objective of modelling learning of science as also mathematics and engineering.</p> <p>The course addresses the following questions: What is it about human cognition that enables us to do science, over and above our ability to speak languages and engage in rich cultural practices? Do scientific abilities have some sort of biological basis, if so why other animals don't practice anything like science? Is science an entirely social practice? Are the contexts of learning same or different from the contexts of discovery and invention? What are the various parameters of cognition that contribute to scientific pursuit? Given these insights, what does it take to impart scientific temper among all? The discussions will keep in focus the mandate of science education in the country and offer a theoretical foundation to explore and model science education practices as an empirical discipline, within the broader framework of modelling learning/cognition.</p>

Evaluation /assessment	End-Sem Examination-40% Mid-Sem Examination-% Others-Evaluation will be based on multiple assessments Participation in discussion forums and quizzes (40) Written assignments/ submissions (20)%
Suggested readings (with full list of authors, publisher, year, edn etc.)	<ul style="list-style-type: none"> • Carruthers, P. E., Stich, S. E., & Siegal, M. E. (2002). The cognitive basis of science. Cambridge University Press. • Thagard, P. (2012). The cognitive science of science: Explanation, discovery, and conceptual change. Mit Press. • Giere, R. N. (Ed.). (1992). Cognitive models of science (Vol. 15). U of Minnesota Press. • Nersessian, N. J. (2010). Creating scientific concepts. MIT press. • Carey, S., & Gelman, R. (2014). The epigenesis of mind: Essays on biology and cognition. Psychology Press. • Vosniadou, S. (Ed.). (2008). International handbook of research on conceptual change (Vol. 259). New York: Routledge.