



IIT Mandi

Proposal for a New Course

Course number : IK 503
Course Name : Cognitive Psychology and the Indian Thought System
Credit Distribution : 3-0-0-3
Intended for : BTech/MTech/MS/MSc/MA/Ph.D.
Prerequisite : None
Mutual Exclusion : None

1. Preamble:

This course is meant for students working in mental health applications and allied areas to develop awareness on topics concerning cognitive psychology and cognitive neuroscience. These topics may include perception, attention, memory, language, problem solving, reasoning, and judgment and decision-making. This course also brings the Indian thought system perspective from the Samkhya and Yoga, and how the Indian thought contrasts with the western thought. The course will expose students to research methods involving behavioural, neuroimaging, and clinical research from the western theories. This course will provide students an understanding of theories of cognitive psychology involving mental processes for perception, attention, memory, language, problem solving, reasoning, and judgment and decision-making. Also, this course will expose students to the approaches and theories from the Indian thought system. The course may involve lectures, student presentations, discussion, video materials, and class experiments. Students may also work in groups on projects that involve doing experiments to test different theories from the western and Indian thought systems.

2. Course Modules with quantitative lecture hours:

Unit 1: Evolution, Mind, and Brain (5 Hours)

Nervous system - anatomy and physiology; Functional neuroanatomy; Tools for investigation – electrophysiology, imaging, and others; how the brain creates mind?; Translation to behavior — emotion/cognition/decision making; mental representations and processing; dissociations and associations.

Unit 2: The Indian Knowledge System (7 hours)

Six Schools of philosophy; Buddhism; Bhagavad Gita; Mapping with the Neuroscientific/psychological understanding from Unit 1; Mental health; cognition in Samkhya and yoga; the body – mind – intellect – consciousness complex; consciousness; panca – kosa – a five layered existence; four states of existence; driving issues in

consciousness studies; the tri – guna system; cognitive training hypothesis in yoga; psychological effects of yoga/meditation with clinical and nonclinical populations; Extraordinary cognition hypothesis via eightfold path described in the Yogasutras. Relative versus absolute reality hypothesis.

Unit 3: Perception and Attention (7 Hours)

Introduction to perception; visual perception; structure of visual system; top-down (context effects) and bottom-up (from features to objects) processing; visual recognition; interactive nature of perception; nature and roles of attention; failures of selection; successes of selection; information processing theories of attention; electrophysiology and human attention; functional neuroimaging and transcranial magnetic stimulation.

Unit 4: Representation, Encoding, and Retrieval of Knowledge in Long-Term Memory (7 Hours)

Role of knowledge in cognition; representations and their formats; representation to category knowledge; structures in category knowledge; category domains and organization; nature of long-term memories; encoding; retrieval; encoding with difficulty to recall; non-declarative memory systems.

Unit 5: Working Memory and Executive Processes (6 Hours)

Introduction to working memory; from primary memory to working memory; working memory models; person-to-person variation; dopamine's role; frontal lobe connection; frontal damage and the frontal hypothesis; executive attention; switching attention; inhibition of response; sequencing; monitoring.

Unit 6: Emotion, Cognition, Decision-making, and Problem Solving (7 Hours)

Defining emotion; manipulating and measuring emotion; emotional learning: acquiring evaluations; emotion and declarative memory; emotion, attention, and perception; nature of a decision; rational decision making; neural bases of expected utility calculations; human decision making and the expected utility model; complex, uncertain decision making; nature of problem solving; analogical reasoning; inductive reasoning; deductive reasoning.

Unit 7: Language, Motor Cognition, and Mental Simulation (5 Hours)

Nature of language; processes of language comprehension; processes of language production; language, thought, and bilingualism; nature of motor cognition; mental simulation and the motor system; imitation; biological motion.

Laboratory/practical/tutorial Modules: None.

3. Textbooks:

Smith, E. E., & Kosslyn, S. M. (2013). *Cognitive Psychology. Mind and Brain*. New Jersey: Pearson. ISBN: 978-1-292-02235-2

Eysenck, M. W., & Keane, M. T. (2020). *Cognitive Psychology, A Student's Handbook* (Eighth Edition). Hove: Psychology Press. ISBN: 1-84169-359-6

4. References:

Ward, J. (2015). *The Student's Guide to Cognitive Neuroscience* (3rd edition). Hove: Psychology Press. ISBN: 1841695343

Anderson, J. R. (2020). *Cognitive Psychology and Its Implications* (9th edition). Worth Publishers. ISBN: 1319067115

Sedlmeier P. & Srinivas K. (2016). How Do Theories of Cognition and Consciousness in Ancient Indian Thought Systems Relate to Current Western Theorizing and Research? *Front Psychol.* 2016 Mar 15;7:343. doi: 10.3389/fpsyg.2016.00343.

**5. Similarity with the existing courses:
(Similarity content is declared as per the number of lecture hours on similar topics)**

S. No.	Course Code	Similarity Content	Approx. % of Content
1.	NA		

6. Justification of new course proposal if cumulative similarity content is >30%:

NA



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