

Curriculum Ph.D.



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Indian Institute of Technology Jodhpur

Proposed Curriculum
Ph.D. (Humanities and Social Sciences)
 NEW Program

Cat.	Course Number: Course Title	L-T-P	Credits		Cat.	Course Number: Course Title	L-T-P	Credits
I Semester					II Semester			
E	Electives				E	Electives		
Total					Total			
III Semester					IV Semester			
H	HS799 Ph.D. Thesis				H	HS799 Ph.D. Thesis		
Total					Total			
V Semester					VI Semester			
H	HS799 Ph.D. Thesis				H	HS799 Ph.D. Thesis		
Total					Total			
VII Semester					VIII Semester			
H	HS799 Ph.D. Thesis				H	HS799 Ph.D. Thesis		
Total					Total			

Electives

Semester I				Semester II			
HS751	Consciousness	3-0-0	3	HS752	Cognitive Science	3-0-0	3
HS754	Qualitative and Quantitative Methodology	3-0-0	3	HS753	Bioengineering Ethics	3-0-0	3
HS755	Philosophy of Mind	3-0-0	3	HS757	Twentieth Century Analytic Philosophy	3-0-0	3
HS756	Nature Writings in American Literature	3-0-0	3	HS758	Literature and Environment	3-0-0	3
				HS759	Language and Cognition	3-0-0	3
				HS760	Philosophy of Science	3-0-0	3

S.No.	Category	Category Title	Students with	Total Courses	Total Credits
1	E	ELECTIVES	Master's Degree	4	12
			Bachelor's Degree	10	30
2	H	Thesis	-	-	-

Course Title	Consciousness	Course No.	HS751			
Department	Biologically-Inspired System Science	Structure	3	0	0	3
Offered for	PhD students	Status	Core		Elective ✓	
Pre-requisite	<i>Consent of Teacher</i>	To take effect from	July 2013			

Objectives

1. To provide an overview of the field of consciousness studies mainly from philosophical and psychological standpoints.

Learning Outcomes

1. Gaining mastery over different problems associated with the phenomenon of consciousness
2. Learning some experimental techniques to undertake research in the field of consciousness studies

Course Content

1. Introduction: Defining Consciousness, Biological basis of Consciousness, Level of consciousness, Development of Consciousness, First, second and third person account of consciousness by Phenomenology, Psychophysics and Contrastive analysis method.
2. Relationship of Consciousness with other processes: Attention, Divided attention, Automatism, Working memory, Emotion, Self
3. Access consciousness and phenomenal consciousness: Qualia, Consciousness as an epiphenomenon versus consciousness as a fundamental feature of universe
4. Related Issues: Self, Freewill, altered states of consciousness and future of consciousness

Reference Books

1. Zelazo, P. D., Moscovitch, M. & Thompson, E., *The Cambridge Handbook of Consciousness*, 1st Edition, Cambridge University Press, 2007
2. Revonsuo, A. & Kamppinen, M., *Consciousness in Philosophy and Cognitive Neuroscience*, Philosophy Press, 1994
3. Baars, B. J., *In the Theater of Consciousness: The Workspace of Mind*, Oxford University Press, 2001
4. Metzinger, T., *Conscious Experience*, Imprint Academic, 1996

Course Title	Cognitive Science	Course No.	HS752			
Department	Biologically-Inspired System Science	Structure	3	1	0	4
Offered for	PhD students	Status	Core		Elective √	
Pre-requisite	<i>Consent of Teacher</i>	To take effect from	December 2013			

Objectives

To acquire an understanding of the principles of cognitive science, with the ultimate aim of applying this knowledge to diverse areas, such as human-computer interface, designing intelligent systems, improving communication systems, biomedical engineering

Learning Outcomes

1. Understanding Cognitive Science, its methods, and principles
2. Understanding the myriad phenomena in Cognitive Science from the philosophical, psychological, computational, and biological approaches
3. Applying the knowledge learnt in the course to diverse situations

Course Content

1. *Cognitive Science as a discipline*: Philosophical, psychological, biological, and computational approaches to cognition, The methods of cognitive science, Evolution and plasticity of the brain, The scientific study of consciousness
2. *Basic Phenomena in Cognitive Processing*: Perception, Attention, Memory, Action
3. *Higher Cognitive Functions*: Cognitive control, Emotion, Language, Social cognition

Reference Books

1. Gazzaniga, M.S., Ivry, R.B., & Mangun, G.R. (2013). *Cognitive Neuroscience: The biology of the mind*. (Fourth Edition). W.W. Norton
2. Reisberg, D. (2012). *Cognition: Exploring the science of mind*. (Fifth Edition). W.W. Norton
- Smilek, D., Sinnett, S., & Kingstone, A. (2013). *Cognition*. (Fifth Edition). Canada: Oxford University Press

Course Title	Bioengineering Ethics	Course No.	HS753			
Department	Biologically-Inspired System Science	Structure	3	0	0	3
Offered for	PhD Students	Status				Elective
Pre-requisite	Consent of Teacher	To take effect from	January 2014			

Objectives

1. To introduce major ethical issues in biomedical engineering practices
2. To analyze social and political concerns over recent advancements in life sciences and technology
3. To critically evaluate bioethical issues in four overlapping areas, namely, i) concerning life-saving technologies at the beginning and end of life, ii) life-enhancing technologies that improve the quality of life, iii) reproductive technologies, and iv) technologies that deal with genetic engineering

Learning Outcomes

1. It is expected that the course may help students nurturing a virtuous disposition which inspires them to use the knowledge, tools, and techniques responsibly

Course Content

Introduction:

Ethics: definition and its implications; the world of ethics: descriptive, normative & applied; nature of moral judgments: rules of conduct, the idea of *ought*, duty deliberation, consistency; significance of applied ethics: greater attention to context specificity; uniqueness of biomedical engineering; recent advancements in biological sciences & engineering; added dependency on technology; emergence of new ethical issues; cases for reflection: Seattle God Committee, Gelsinger Case, Immortal Cells Debate, Genetically Modified Crops

Ethical Theories and Moral Principles:

Ethical theories: Tools for analyzing ethical issues; Major ethical theories & approaches: Actor oriented, Motivation oriented & Consequence oriented; *Methods of ethical assessment*: Top-down & bottom-up; *Principlism*: Principles of common morality: Autonomy, Beneficence, Nonmaleficence & Justice; *The pragmatic turn*: context & justifications

Major Ethical Issues in Biomedical Engineering:

Autonomy of persons; *informed consent*; *primum non nocere* (First, do no harm); beneficence of the subject & the obligation to do good; biomedical engineering for treatment & enhancement; justice & equality; property rights over the products developed; major challenges to risk assessment methods; ethics committees

Professional Obligations in Biomedical Engineering:

Professional codes & international declarations; privacy and confidentiality; professional competence and knowledge; respect for cultural diversity and pluralism; role of conscience and justifications for whistle blowing; case studies: Gelsinger case, bubble babies, Wanglie case, Indian surrogacy, Terri Schiavo, HeLa cells debate, harvesting organs from animals, genetically modified (GM) foods, implants, drug trials

Reference Books

1. Almond, B. (1999). *Introducing Applied Ethics*. Oxford: Blackwell
2. Beauchamp, T.L & Childress, J.F. (2001). *Principles of Biomedical Ethics*. Oxford: Oxford University Press.
3. Harris, J. (2001). *Bioethics*. Oxford: Oxford University Press
4. Kant, I. (2002). *Groundwork for the Metaphysics of Morals* (ed. Allen W. Wood et al). New Haven: Yale University Press
5. Kass, L.R. (Ed). (2003). *Beyond Therapy: Biotechnology and the pursuit of Happiness*. New York: Harper & Collins
6. Kuhse, H. & Singer, P. (2009). *A Companion to Bioethics*. Oxford: Blackwell.
7. Sandel, M. (2007). *The Case Against Perfection*. Cambridge: Belknap Press.
8. Savulescu, J. & Bostrom, N. (Ed.). (2009). *Human Enhancement*. Oxford: Oxford University Press.
9. Singer, P. (2011). *Practical Ethics*. Cambridge: Cambridge University Press.

Course Title	Qualitative and Quantitative Methodology	Course No.	HS754			
Department	Humanities and Social Sciences	Structure	3	0	0	3
Offered for	PhD	Status				Elective
Pre-requisite		To take effect from	July 2014			

Objectives

1. To provide theoretical overview to fundamentals of different methodology
2. To provide basic understanding of methods available and how to combine them in designing research
3. To develop understanding of applied issues related to different methodology

Learning Outcomes

1. Understanding and appreciation for variety of methodological options available
2. Understanding of selecting and applying methods according to research problem
3. To prepare students to design, carry out, report, read and evaluate research

Course Content

Qualitative and Quantitative paradigm: Outline and difference

Qualitative and Quantitative Methods: Observation, Interview, Survey, Case study, Ethnography; Questionnaire, Experimental Research

Sampling: Probability and Non-probability sampling methods, Research Design: Between group, Within group, and N=1 design, Analysis: Descriptive report, Thematic, Content, Narrative and Discourse Analysis, Statistical Analysis

Ethical issues and Guidelines in Qualitative and Quantitative paradigm

Reference Books

1. Seale, C., Gobo, G., Gubrium, J.F. & Silverman, D. (2004). *Qualitative Research Practice*. London: Sage
2. Reason, P. (Ed.). (1988). *Human inquiry in action: Developments in new paradigm research*. London: Sage
3. Heiman, G.W. (2000). *Understanding Research Methods and Statistics: An Integrated Introduction for Psychology*. CENGAGE Learning
4. Kerlinger, F.N. & Lee, H.B. (2000). *Foundation of Behavioral Research*. Harcourt College Publishers
5. Kothari, C.R. (2004). *Research Methodology: Methods and Techniques*. New Age International (P) Limited Publishers: New Delhi

Course Title	Philosophy of Mind	Course No.	HS755			
Department	Humanities and Social Sciences	Structure	3	0	0	3
Offered for	PhD	Status				Elective
Pre-requisite		To take effect from				

Objectives

1. To provide an overview of various philosophical theories of mental phenomena

Learning Outcomes

- 1- Understanding the significance of various philosophical approaches to the study of mind
- 2- Gaining an ability to apply how philosophical theories can be used in empirical study of mind

Course Content

1. Historical Views: Plato, Aristotle and Cartesian Dualism
2. Behaviorism: Psychological behaviorism and logical Behaviorism. Critique of Behaviorism
3. Identity Theory: Token identity versus type identity
4. Functionalism: Varieties of functionalism, Language of Thought hypothesis, objections to functionalism
5. Eliminative Materialism: Folk psychology versus Cognitive Science, Social Impact of eliminative approach

Reference Books

1. Rediscovery of Mind by John Searle MIT Press, 1992
2. A Companion to Philosophy of Mind ed. By S Guttenplan Wiley Blackwell 1995
3. Philosophy of Mind John Heil. Psychology Press, 2004.

Course Title	<i>Nature Writings in American Literature</i>	Course No.	HS756			
Department	Humanities and Social Sciences	Structure	3	0	0	3
Offered for	PhD	Status				Elective
Pre-requisite		To take effect from	July 2014			

Objectives

1. The course will provide a background to the literary history of America, its most significant works and writers with specific reference to Nature Writings
2. The course will cover writings on Nature and the diverse voices that articulate the significance of nature ranging from White American to African American and Native American writings

Learning Outcomes

1. The student will gain insights into the literary traditions of America, within the context of history and culture
2. The spectrum of writings from different American cultures will expose the students to native wisdom, indigenous views as well as to understanding concepts such as stewardship, tending, dwelling and reverence in American Nature Writing

Course Content

1. The Beginnings – American Frontier White American Tradition: Crevecoeur to Henry Thoreau, Anne Dillard to Rachael Carson, John Muir to Terry Tempest Williams
2. Place based understandings of the writings, the representations of Nature and the transformation of the landscape over time
3. Bioregionalism and the American tradition
4. Nature and native wisdom in African –American and Native-American Writings

Reference Books

1. Slovic, Scott. Seeking Awareness in Nature Writing. Salt Lake City: U of Utah Press, 1998. Print
2. Buell, Lawrence. The Environmental Imagination. Thoreau, Nature Writing and the Formation of American Culture. Cambridge: Harvard UP, 1995. Print

Course Title	Twentieth Century Analytic Philosophy	Course No.	HS757			
Department	Humanities and Social Sciences	Structure	3	0	0	3
Offered for	PhD students	Status	Elective			
Pre-requisite	Consent of Teacher	To take effect from				

Objectives

1. Evaluation of the philosophical views of key thinkers of Twentieth century analytic philosophy.
2. Investigate philosophical issues in *language, meaning and truth*.

Learning Outcomes

1. Grasp theoretical structure and nature of analytic philosophy of Twentieth century.
2. Understand the aim and role of analytic philosophy based on the discussions in this course.

Course Content

Frege, Russell and Wittgenstein (early phase): Early linguistic turn and philosophical issues in language, truth and meaning. Frege's *Concept Script*. Russell's *Principia*. Wittgenstein's *Tractatus*.

Wittgenstein (later phase): Philosophical Investigations: Critique of the *Tractatus*. Meaning and Use. Rule following, Language games, Family Resemblances, Forms of life and the nature of philosophy.

Later Discussions: Philosophical attempts by Davidson, Dummet and Quine: Later twentieth century debates on language, truth and meaning.

Reference Books

1. Devitt, Michael, and Richard Hanley (eds). *The Blackwell Guide to the Philosophy of Language*. Malden, MA: Blackwell, 2006
2. Russell, Bertrand and Whitehead, A. North., *Principia Mathematica*, 3 vols, Cambridge: Cambridge University Press, 1962.
3. van Heijenoort, Jean (ed.), *From Frege to Gödel: A Source Book in Mathematical Logic, 1879–1931*, Cambridge, MA: Harvard University Press, 1967
4. Wittgenstein, Ludwig., *Tractatus Logico-Philosophicus*, D. F. Pears and B. F. McGuinness (trans.), New York: Humanities Press, 1961.
5. Wittgenstein, Ludwig., *Philosophical Investigations*, 4th edition, P.M.S. Hacker and Joachim Schulte (eds. and trans.), Oxford: Wiley-Blackwell, 2009.

Course Title	Literature and Environment	Course No.	HS758			
Department	Humanities and Social Sciences	Structure	3	0	0	3
Offered for	PhD students	Status				Elective
Pre-requisite	Consent of Teacher	To take effect from				

Objectives

1. The course will examine issues related to the studying and understanding of environments situated in cultural spaces. It will focus on environmental issues and a range of responses and actions to these issues.
2. It will provide an overview of concepts, positions, and movements and will discuss the spirit of commitment to environmental praxis, in terms of engagement, retreat and ecocritical responsibility.

Learning Outcomes

1. The student will be gain an understanding of the domain of literature and environment and is trained in creative and critical thinking - of both literary and nonliterary narratives.
2. The genre based, period based and author based modules will expose the student to diverse perspectives and will certainly go a long way in creating environmental sensitivity which is the need of the hour.

Course Content

1. Positions in Ecocriticism- Cournucopia-Envrionmentalism- Deep Ecology-Eco-feminism
Social Ecology and Marxism- Heideggerian Philosophy
2. Genres and understanding of the genres in the context of environment -Pastoral-
Wilderness-Apocalypse- Romantic Pastoral – American Pastoral- Pastoral ecology – Sublime
3. An Introduction to Environmental History – Rachael Carson- Austin- Aldo Leopald-
Edward Abbey-Wallace Stegner- Wendell Berry- Berger- Sale to the present

Reference Books

1. Garrard, Greg. *Ecocriticism: The New Critical Idiom*. New York: Routledge. 2004 Print.
2. Glotfelty, Cheryl. *The Ecocriticism Reader: Landmarks in Literary Ecology*. eds. Cheryl Glotfelty and Harold Fromm. Athens: U of Georgia P, 1996. Print.
3. Gadgil, Madhav and Ramachandra Guha. *Ecology and Equity: The use and abuse of nature in contemporary India..* London: Routledge, 1995. Print.

Course Title	Language and Cognition	Course No.	HS759			
Department	Humanities and Social Sciences	Structure	3	0	0	3
Offered for	PhD students	Status				Elective
Pre-requisite	<i>Consent of Teacher</i>	To take effect from				

Objectives

1- To gain a mastery over the state of the art in research on how language and conceptual system interact

Outcomes

- 1- Understanding the role that language plays in augmenting human cognitive capacity
- 2- Developing conceptual tools that can contribute to analyse the complex interface between language and conceptual systems.

Course Content

- 1- Language: The Nature of Language, Methods of Studying Language, Formal Linguistics versus Cognitive Linguistics
- 2- Conceptual System: Concept acquisition, the role of categories in cognitive processing, classical versus prototype approach to categories.,
- 3- Language-Thought Interface: Linguistic Relativity hypothesis, Language as a window into the conceptual structure. Dictionary versus Encyclopaedic view of meaning, Metaphorical Understanding of Abstract Concepts, Cognitive Grammar

Reference Books

- 1. Language in Mind: Advances in the Study of Language and Thought ed. By Dedre Gentner and Susan Goldin
- 2. Cognitive Linguistics: An Introduction by Vyvyan Evans and Melanie Green Edinburgh University Press 2006
- 3. Concepts: Core Readings by Eric Margolis and Stephen Laurence MIT Press 1999

Course Title	Philosophy of Science	Course No.	HS 760			
Focus Group	Humanities and Social Sciences	Structure (L-T-P:C)	3	0	0	3
Offered for	M.Tech and Ph.D Students	Status	Elective			
Pre-requisite	Consent of Teacher					

Objectives

1. Provide a deeper insight into scientific methodology
2. Present the development of science from natural philosophy to the more empirical and regimented disciplines of today

Learning Outcomes

1. The course will cultivate philosophical awareness of scientific methodology.
2. The course may help students to analyze philosophical debates associated with natural sciences.
3. The student is expected to acquire a basic understanding of what science is, how it can be distinguished from other ways of knowledge, and how scientific explanation works.

Contents

Introduction: Philosophy of Science: Significance and Scope , Brief Intellectual Landscape: Epistemology of Science, Metaphysics of Science, Ethics of Science

History of Philosophy of Science: Conceptions in Ancient Greek Science, Aristotle, Natural philosophy, Mechanistic World view, Copernicus, Galilio, Kepler, Bacon. Twentieth Century: Logical Positivism, Fasificationism, Socio-Historical Schools

Scientific Knowledge, Discovery and Creativity: Structure of Scientific Theories, Syntactic and Semantic approaches to Scientific Theories, Laws and Models. Cognitive turn in Philosophy of Science: Mary Hesse, Nancy Nersessian and Ronald Giere. Cognitive Science of Science

Major Debates: Causation and Explanation: Hempel, Deductive-Nomological Model, Statistical Explanation, Theory-Confirmation: Problem of Induction, Under-determination of Theories by Evidence, Quine-Duhem thesis, Theory-Ladenness, Bayesianism

References

1. Kuhn,T.S., (1962), *The Structure of Scientific Revolutions*, University of Chicago Press, New York
2. Salmon,M.H. (Ed), (1992), *Introduction to the Philosophy of Science*, Prentice-Hall, New York
3. Psillos,S. and Curd,M., (2008), *The Routledge Companion to Philosophy of Science*, Routledge, London
4. Rosenberg,A., and McShea,D.W., (2008), *Philosophy of Biology*, Routledge, London
5. Psillos,S., (2003), *Causation and Explanation*, McGill-Queens University Press, Montreal