

Master in CsH: LCO

2013-2014

PHILOSOPHY AND FOUNDATIONS OF SYMBOLIC SYSTEMS (3
credits)

2013-2014

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Offices: C6 and C5 (Santamaria Centre)

Syllabus (subject to possible amendment)

1. General symbolic systems.
2. Formal languages, semantic structures, and formal systems. The notion of consequence. What is a logic?
3. Deduction, Induction, and Abduction.
4. On Analytic/Synthetic, Necessary/Contingent, and A priori/A posteriori.
5. Formal Grammars. The Chomsky Hierarchy.
6. Internal Foundations of Mathematics: Number Theory, Set Theory, Category Theory.
7. Logic in the classical foundations of mathematics: Logicism, Intuitionism, Formalism.
8. Information and Computation: Information Theories and Systems.
9. Introduction to Coding Theory and Cryptography: Basic notions.

Requirements

Students are required to attend all lectures and seminars and they must submit three short essays (mid-November, mid-December, and mid-January) and to prepare one seminar presentation (maximum 30 minutes). Topics for writing essays will be the same for all students. Seminar presentations will consist in answering and discussing questions which will appear during the course of PFSS, and in solving and discussing previously distributed exercises.

Bibliography

Basic bibliography

Benacerraf, P. and Putnam, H. (eds) (1983) *Philosophy of Mathematics: Selected Readings* 2nd ed. Cambridge: Cambridge University Press

Boden, M. (ed.) (1990), *The Philosophy of Artificial Intelligence*. Oxford: Oxford University Press.

Dretske, F., (1981), *Knowledge and the Flow of Information*. Cambridge, Mass.: M.I.T. Press.

Floridi, L. (1999), *Philosophy and Computing*. London: Routledge.

Floridi, L. (2010), *Information. A very Short Introduction*. Oxford: Oxford University Press.

Gleick, J. (2011) *The Information: A History, A Theory, A Flood*. Fourth Estate Publishing.

Kahn, D. (1996), *The Codebreakers: The Comprehensive History of Secret Communication from Ancient Times to the Internet*. Revised and Updated. Scribner: New York.

Partee, B. H., ter Meulen, A. & Wall, R. E. (1990) *Mathematical Methods in Linguistics*. Dordrecht: Kluwer.

Piper, F. and Murphy, S. (2002), *Cryptography. A Very Short Introduction*. Oxford: Oxford University Press.

Shapiro, S. (2000) *Thinking about Mathematics: The Philosophy of Mathematics* Oxford: Oxford University Press.

Shapiro, S. (ed) (2005) *The Oxford Handbook of Philosophy of Mathematics and Logic*. Oxford: Oxford University Press.

Simon, H. (1969), *Sciences of the Artificial*. Cambridge, Mass.: M.I.T. Press.

Wang, H., (1974), *From Mathematics to Philosophy*. London: Routledge.

Wolfram, S. (1989), *Philosophical Logic. An Introduction*. London: Routledge.

Advanced bibliography

Boyer, C. B. (1968), *A History of Mathematics*. New York: Wiley.

Floridi, L. (ed.) (2004), *The Blackwell guide to the Philosophy of Computing and Information*. Oxford: Blackwell.

Goble, L. (ed.) (2001), *The Blackwell guide to Philosophical Logic*. Oxford: Blackwell.

Goldie, C. M., and R. G. E. Pinch (1991), *Communication Theory*. Cambridge: Cambridge University Press.

Hoopes, J. (ed.), (1991) *Peirce on Signs. Writings on Semiotic by Charles Sanders Peirce*. The University of North Carolina Press.

Jacquette, D. (ed.) (2002), *Philosophy of Mathematics. An Anthology*. Oxford: Blackwell.

Kleene, S. C. (1952), *Introduction to Metamathematics*. Amsterdam: North-Holland.

Newell, A. & Simon, H. A. (1972), *Human Problem Solving*. Englewood Cliffs, NJ.: Prentice-Hall.

Mac Lane, S. (1986), *Mathematics, Form and Function*. New York: Springer Verlag.

Morris, C. W. (1955), *Signs, Language, and Behavior*. New York: George Braziller, Inc.

Moser, S.M. and Chen, P-N. (2012), *A Student's Guide to Coding and Information Theory*. Cambridge: Cambridge University Press.

Roman, S. (1997), *Introduction to Coding and Information Theory*. New York: Springer.

Shapiro, S. (1991) *Foundations without Foundationalism: A case for Second-order Logic*. Oxford: Clarendon Press

Van Heijenoort, J.(ed.) (1977), *From Frege to Gödel. A Source Book in Mathematical Logic (1879-1931)*. Cambridge, Mass.: Harvard University Press

Interesting links

world.logic.at/

<http://plato.stanford.edu/>

www.turing.org.uk/turing/

Evaluation and grading system:

Active participation by students will be required, both in the lectures and in the seminars. Specific readings for each topic will be assigned. Students will be expected to read them and then to contribute actively in the classroom. Students will also be required to prepare seminar presentations and to write three short essays during the course of PFSS.

Final examination: Take-home final.

45% short essays + 25% seminar presentation and participation + 30% take-home final.

a. Philosophical Analysis. i. An introductory course in the Philosophy Department. Symbolic Systems 3. PHIL 107B. Plato's Later Metaphysics and Epistemology. PHIL 167D. Philosophy of Neuroscience. PHIL 172. History of Modern Moral Philosophy. Mathematical Foundations of Computing (Corequisite: CS 106B or X). CS 154. Introduction to the Theory of Computation (Prerequisite: CS 103 or significant proof-writing experience.) The History of Western Philosophy is a one-year course on the main philosophers of the western world. In this course we investigate the thought of each of the great philosophers in order to understand the main traditions of epistemological, moral and political thought in western philosophy. The course will begin with an investigation into the origins of philosophy in the west. We will examine the Pre-Socratic philosophers and their importance for understanding the central questions of philosophy, Plato and the later history of Greek philosophy. 2. Marcia Colish, *Medieval Foundations of the Western Intellectual Tradition* (Yale University Press, 1997). Selection in the Reader. 3. Frederick Copleston, *A History of Philosophy*. All courses are three (3) credits unless otherwise indicated. Course selections should be made in consultation with an academic advisor. Criminology & criminal justice. Major (2013 - 2014). College of Design & Social Inquiry Bachelor of Arts (BA). F. Two (2) must be taken from Foundations of Written Communications. Two additional courses are REQUIRED. F. The philosopher Ernst Cassirer (1874-1945) wrote in 1929: 'For what it [the philosophy of symbolic forms] is seeking is not so much common factors in being as common factors in meaning. Hence we must strive to bring the teachings of pathology, which cannot be ignored, into the more universal context of the philosophy of culture' (Cassirer, 1955: 275). Recent papers in Ernst Cassirer's *Philosophy of Symbolic Forms*. Papers. People. In the present paper, the author aims at laying the foundations of a symbolics of technical gesture, according to the thesis that symbolic faculty is another face of the technological one, and that they are both in truth two sides of the more. In the present paper, the author aims at laying the foundations of a symbolics of technical gesture, according to the thesis that symbolic faculty is another face of the technological one, and that they are both in truth two sides of the same coin. Accordingly, the author suggests to rename the whole dimension as "meta-environmentality".