

DEREE COLLEGE SYLLABUS FOR: PH 4113 PHILOSOPHY OF SCIENCE	
(Updated Spring 2019)	UK LEVEL L6 UK CREDITS: 15 US CREDITS: 3/0/3
PREREQUISITES:	PH 1000 Introduction to Philosophy or PH 3011 Introduction to Logic
CATALOG DESCRIPTION:	A systematic introduction to twentieth-century philosophy of science focusing on issues in the methodology of the natural and social sciences: verification, falsification, confirmation, theoretical term, theories, laws, explanation, scientific change and progress, realism and antirealism.
RATIONALE:	This course is designed to integrate the sciences with the humanities, encouraging students to develop critical skills for evaluating the methods and theories of various sciences. Of interest to all students who wish to appreciate scientifically oriented cultures. Especially interesting for science majors.
LEARNING OUTCOMES:	As a result of taking this course, the student should be able to: <ol style="list-style-type: none"> 1. Demonstrate understanding of concepts such as verification, confirmation, falsification, explanation, prediction, probability, theory, hypothesis, model, scientific law, scientific method, scientific change, scientific progress. 2. Demonstrate understanding of the theories proposed to account for scientific change. 3. Develop criteria for theory appraisal. 4. Appraise the relations between scientific theory and empirical evidence and between scientific theory and the external world. 5. Discuss the differences between science and other domains of knowledge. 6. Analyze and discuss complex concepts and solve theoretical problems.
METHOD OF TEACHING AND LEARNING:	In congruence with the learning and teaching strategy of the college, the following tools are used: <ul style="list-style-type: none"> - Classes consist of lectures and interactive learning (class discussions of both primary and secondary sources). - Interpretation of the primary texts. - Office hours: Students are encouraged to make full use of the office hours of their lecturer, where they can discuss the course material. - Use of a Blackboard site, where lecturers can post lecture notes, research paper instructions, timely

	<p>announcements, and additional resources.</p> <ul style="list-style-type: none"> - Use of library facilities: Students are encouraged to make use of the library facilities for their research paper as well as for preparation for the final exam. 								
<p>ASSESSMENT:</p>	<p>Summative:</p> <table border="1" data-bbox="620 331 1362 537"> <tr> <td>Midterm examination (1-hour). Essay-type questions</td> <td style="text-align: center;">40%</td> </tr> <tr> <td>Research paper (3,000 words). Literature review/ interpretation of texts/ evaluation</td> <td style="text-align: center;">60%</td> </tr> </table> <p>Formative:</p> <table border="1" data-bbox="620 596 1362 667"> <tr> <td>Class presentation (individual or group)</td> <td style="text-align: center;">0%</td> </tr> <tr> <td></td> <td></td> </tr> </table> <p>The formative assessment aims at preparing students for their research paper. The midterm examination tests Learning Outcomes 1,2, 3, The research paper tests Learning Outcomes 3, 4, 5, 6.</p>	Midterm examination (1-hour). Essay-type questions	40%	Research paper (3,000 words). Literature review/ interpretation of texts/ evaluation	60%	Class presentation (individual or group)	0%		
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<p>INDICATIVE READING:</p>	<p>REQUIRED READING: Ladyman, J., <u>Understanding Philosophy of Science</u>. London and New York. Routledge, latest edition.</p> <p>RECOMMENDED READING: McGrew, T., Alspector-Kelly, M., and Allhoff, F. <u>The Philosophy of Science. An Historical Anthology</u>. Wiley-Blackwell, latest edition.</p> <p>Brown, H. I. <u>Perception, Theory and Commitment: The New Philosophy of Science</u>. Chicago and London: The University of Chicago Press, latest edition.</p> <p>Kuhn, T. S. <u>The Structure of Scientific Revolutions</u>. University of Chicago Press, 1962.</p> <p>Losee, J. <u>A Historical Introduction to the Philosophy of Science</u>, Oxford University Press, latest edition.</p> <p>De Witt, Richard, <u>Worldviews. An Introduction to the History and Philosophy of Science</u>. Wiley-Blackwell, 2010.</p> <p><u>Criticism and the Growth of Knowledge</u>. Lakatos, I., and Musgrave, A., (eds.). Cambridge University Press, latest edition.</p> <p><u>Introduction to the Philosophy of Science</u>. Salmon, M. H. et al. (eds.). Englewood Cliffs, N J: Prentice-Hall, latest edition. Cambridge, 1970.</p>								

	<p><u>The Philosophy of Science</u>. Boyd, R., Gasper, P., and Trout, J. D. (eds.) Cambridge, MA: MIT Press, latest edition.</p>
<p>INDICATIVE MATERIAL: (e.g. audiovisual, digital material, etc.)</p>	<p>RECOMMENDED MATERIAL: <i>Philosophical Review</i> <i>Journal of Philosophy</i> <i>Nous</i> <i>Mind</i> <i>Philosophy & Phenomenological Research</i> <i>Australasian Journal of Philosophy</i> <i>Philosophy of Science</i> <i>British Journal for the Philosophy of Science</i></p>
<p>COMMUNICATION REQUIREMENTS:</p>	<p>Research paper submitted in Microsoft Word. Class discussions require academic/ professional English and debating speech skills.</p>
<p>SOFTWARE REQUIREMENTS:</p>	<p>Microsoft Word</p>
<p>WWW RESOURCES:</p>	<p>http://plato.stanford.edu/ http://www.utm.edu/research/iep http://philsci-archive.pitt.edu/</p>
<p>INDICATIVE CONTENT:</p>	<p><u>Part I. Scientific Method</u></p> <ol style="list-style-type: none"> 1. Induction, Inductivism and 17th century Scientific Revolution. 2. The Problem of Induction: the problem, solutions and dissolutions The New Riddle of Induction. 3. Confirmation of scientific hypotheses: the paradoxes of confirmation, Bayesianism. 4. Scientific explanation: the deductive-nomological model, the deductive-statistical model, the inductive statistical model, causal explanations, explanatory unification, the pragmatics of explanation. 5. Falsificationism. Popper's account of scientific method and change. 6. Scientific change: the received view, the theory-ladenness of observation, scientific change through revolutions, paradigms and normal science, incommensurability, relativism, scientific progress. <p><u>Part II Science and Reality</u></p> <ol style="list-style-type: none"> 7. Scientific realism: Metaphysics, Semantics and Epistemology. 8. Antirealism: Underdetermination, Constructive Empiricism. 9. Arguments for and against scientific realism: inference to the best explanation; pessimistic meta-induction.

