Graduate Certificate APPENDIX A
Related Courses and Requirements for the Cognitive Science Graduate Certificate
July 2003 (final version Dec. 4, 2003)

GRADUATE CERTIFICATE REQUIREMENTS

The graduate certificate is aimed to provide post-baccalaureate and Ph.D. students with a graduate-level introduction to Cognitive Science as a theory of the (human and animal) mind. Our objectives are to ensure that each student (a) be able to articulate, at least in broad terms, some of the assumptions that have been thought to unify the various subfields within the domain of Cognitive Science, and (b) be able to apply those assumptions in dealing with issues in at least one of the five core disciplines contributing to cognitive science (Biology, Computer Science, Linguistics, Philosophy, and Psychology). If the student is a graduate student (as opposed to post-bac.), it is to be expected that the chosen discipline is that of the students Ph.D.-granting department.

CGS 500 ("Cognitive Science in Theory and Practice") will be run with the aim in mind of getting students to satisfy (a); and a (minimal) distribution requirement, together with departmental pressures on graduate students generally, will serve to get students to satisfy (b).

To receive a graduate certificate in Cognitive Science, the student must successfully complete 15 credit-hours, distributed as follows:

I. 3 credits of

CGS 500 Cognitive Science in Theory and Practice (*New*)

II. 12 credits from among the following:

BIO 535 Comparative Neurobiology and Behavior
BIO 550 Advanced Comparative Physiology
BIO 556 Communication Biology
BIO 613 Behavioral Ecology and Comparative Neurobiology
BIO 614 Techniques in Behavioral Ecology and Comparative Neurobiology
BIO 618 Molecular Neurobiology
BIO 621 Laboratory in Neurophysiology
BIO 638 Developmental Neurobiology
BIO 650 Membrane Biophysics
CS 521 Computation Sciences * *(only by the approval of the Director of Cognitive Science)*
CS 536 Situated Computing
CS 575 Models of Computation (may not be combined with PHI 520)
CS 621 Parallel and Distributed Computing
CS 636 Computer Vision
CS 663 Artificial Intelligence

CS 674 Heuristic Algorithms
CS 675 Computability and Complexity (may not be combined with PHI 520)
LIN 512 Modern English Grammar
LIN 515 Phonological Analysis
LIN 516 Grammatical Analysis
LIN 517 Special Topics in Linguistics
LIN 617 Studies in Linguistics
PHI 520 Symbolic Logic II (may not be combined with CS 575 or 675)
PHI 560 Philosophy of Science
PHI 565 Philosophy of Language
PHI 575 Philosophy of Mind
PSY 552 Animal Behavior
PSY 562 Advanced Topics in Cognitive Psychology
PSY 564 Advanced Topics in Learning
PSY 565 Advanced Topics in Neuroscience
PSY 566 Advanced topics in Social Psychology * *(only by approval of the Director of Cog Sci)*
PSY 613 Behavioral Ecology and Comparative Neurobiology
PSY 623 Proseminar in Sensation and Perception
PSY 628 Proseminar in Cognitive Processes
PSY 638 Developmental Neurobiology

Of the 12 credit-hours taken in connection with II, at least six must come from the offerings of a single department; and at least three must be from a course outside of the student's Ph.D.-granting department. (If the student is a post-bac., then the latter requirement is replaced by the requirement to take courses from at least two different departments.) Again, the CGS 500 "Cognitive Science in Theory and practice" course does not count as satisfying any of the distribution requirements mentioned in this paragraph.

(An asterisk by a course indicates that the course will count for Cognitive Science credit only on the approval of the Director of Cognitive Science. The main criterion for approval will be the extent to which the course, as taught during the semester for which the student seeks Cognitive Science credit, contains a sufficient amount of materials relevant to Cognitive Science. The Director will make this determination by consultation with relevant faculty from the department teaching the course (including the instructor of the course), in conjunction with the criteria described below for course inclusion.)

A note on these criteria is in order. The basis for inclusion in the list can be characterized as follows. For each of the various disciplines that have contributed to the development of Cognitive Science, we tried to identify the main contributions made by the discipline to Cognitive Science, understood to be the study of the human and animal mind as (biological) information-processing systems. The following was a rough guide:

Biology: (i) the biological basis of information-processing (visual cognition, communication, etc.) and (ii) the evolutionary pressures on biological information-processing systems;

Computer Science: (i) artificial intelligence, (ii) knowledge representation, (iii) the theory of computation and computational complexity, (iv) machine vision; and (v) the study of algorithms;

Linguistics: (i) the syntactic, semantic, and pragmatic aspects of (natural) language use; (ii) the mental representation (in the language user's mind) of those aspects; (iii) the development of language in children, and (iv) the historical evolution of language (as a possible reflection of constraints on natural language cognition);

Philosophy: (i) the nature and concepts of mind and mental states – including the (conceptualization of the) relation between mind and body; (ii) the nature and concept(s) of consciousness; (iii) the concepts of meaning and truth, as they relate to our understanding of the semantic and pragmatic features of language use; (iv) philosophical issues regarding the innateness controversies; and (v) logic and metalogic.

Psychology: (i) concepts, (ii) reasoning, (iii) problem-solving, and (iv) memory.

Individual courses in these disciplines were chosen if a substantial amount of time was devoted to presenting this material.