

Program/Major or Minor/Concentration Revision Form

PAC-15-4

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1.0 Degree Title Specify the two degrees for concurrent degree programs	2.0 Administering Faculty/Unit
Bachelor of Arts and Science	Faculty of Science
1.1 Major /Lagony – Subject) (20 abor, may)	Offering Faculty/Department
Cognitive Science	Faculty of Arts, Faculty of Science/Psychology, Computer Science, Linguistics, Neuroscience, Philosophy
1.2 Concentration (Legacy = Concentration/Option) If applicable (30 char. max.)	3.0 Effective Term of revision or retirement Please give reasons in 5.0 "Rationale" in the case of retirement (Ex. Sept. 2004 = 200409) Retirement
	Term: 201609
1.3 Minor (with Concentration, if applicable) (30 char. max.)	4.0 Existing Credit Weight Proposed Credit Weight
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1.4 Category	5.0 Rationale for revised program
 Faculty Program (FP) Major Joint Major Major Concentration (CON) Minor Minor Concentration (CON) Minor Concentration (CON) Monor Concentration (CON) Internship/Co-op Thesis (T) Non-Thesis (N) Other Please specify 	The main motivation for the changes are (1) to give all students broader exposure to the sub-areas of CogSci, and (2) to ensure that students can get enough training in any one area to move on to graduate studies (which was a challenge for some streams).
1.5 Complete Program Title	
Interfaculty Cognitive Science	
6.0 Revised Program Description (Maximum 150 words) The Interfaculty Program Cognitive Science, which is restricted to students in the B.A. & Sc., is designed to allow students to explore the multidisciplinary study of cognition in humans and machines. The goal is to understand the principles of intelligence and thought with the hope that this will lead to a better understanding of the mind and of learning, and to the development of intelligent devices.	
Note: B.A. & Sc. students who take interfaculty programs must take at least 21 credits in Arts and 21 credits in Science across their interfaculty program and their minor or minor concentration.	

7.0 List of existing program and proposed program

Existing program (list courses as follows: Subj Code/Crse Num, Title, Credit weight, under the headings of: Required Courses, Complementary Courses, Elective Courses)

3 core credits from the following logic courses:

COMP 230 Logic and Computability (3 credits) MATH 318 Mathematical Logic (3 credits) PHIL 210 Introduction to Deductive Logic 1 (3 credits)

3 credits from the following capstone courses:

COMP 424 Artificial Intelligence (3 credits)

- LING 419 Linguistic Theory and its Foundations (3 credits)

LING 565 Pragmatics (3 credits)

— PSYC 532 Cognitive Science (3 credits) — PSYC 538 Categorization, Communication & Consciousness (3 credits)

(continued on Attachment 1A)

Proposed program (list courses as follows: Subj Code/Crse Num, Title, Credit weight, under the headings of: Required Courses, Complementary Courses, Elective Courses)

Required courses (3 credits):

NSCI 201 Introduction to Neuroscience 2 (3 credits)

Core complementary courses (21 credits): 3 credits from the following logic courses: COMP 230 Logic and Computability (3 credits) MATH 318 Mathematical Logic (3 credits) PHIL 210 Introduction to Deductive Logic 1 (3 credits) 3 credits from the following statistics courses: PSYC 204 Introduction to Psychological Statistics (3 credits) MATH 203 Principles of Statistics 1 (3 credits) MATH 323 Probability (3 credits) 3 credits from the following computer science courses: COMP 202 Foundations of Programming (3 credits) COMP 250 Introduction to Computer Science (3) credits) 3 credits from the following linguistics courses: LING 201 Introduction to Linguistics (3 credits) LING 210 Introduction to Speech Science (3 credits) LING 260 Meaning in Language (3 credits) 3 credits from the following philosophy courses: PHIL 200 Introduction to Philosophy 1 (3 credits) PHIL 201 Introduction to Philosophy 2 (3 credits) PHIL 221 Introduction to History and Philosophy of Science 2 (3 credits) 3 credits from the following neuroscience courses: NSCI 200 Introduction to Neuroscience 1 (3 credits) PSYC 211 Introductory Behavioural Neuroscience (3 credits) 3 credits from the following psychology courses: PSYC 212 Perception (3 credits) PSYC 213 Cognition (3 credits) (continued on Attachment 1A)

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48 credits are selected as follows	Complementary Courses (30 credits):
18 credits from program offerings in one of the following five units : Computer Science, Linguistics, Neuroscience, Philosophy, or Psychology.	30 credits selected as follows 18 credits from one of the following lists: Computer Science, Linguistics, Philosophy, Psychology, Neuroscience
12 credits from program offerings in one of the four remaining units.18 credits chosen from program offerings across all five units.	<u>12 credits from any of the five lists</u> Of the <u>30</u> Complementary Course credits, <u>15</u> credits taken must be at the 400 level or higher.
Of the 48 Complementary Course credits, 42 credits taken must be at the 400 level or higher. Computer Science COMP 202 Foundations of Programming (3 credits) COMP 206 Introduction to Software Systems (3 credits) COMP 250 Introduction to Computer Science (3 credits) COMP 251 Algorithms and Data Structures (3 credits) COMP 280 History and Philosophy of Computing (3 credits) COMP 302 Programming Languages and Paradigms (3 credits) COMP 303 Theory of Computation (3 credits) COMP 360 Algorithm Design (3 credits) COMP 400 Honours Project in Computer Science (3 credits) COMP 409 Concurrent Programming (3 credits) COMP 411 Introduction Robotics and Intelligent Systems (3 credits) COMP 421 Database Systems (3 credits) COMP 421 Database Systems (3 credits) COMP 526 Probabilistic Reasoning and AI (3 credits) COMP 527 Logic and Computation (3 credits) COMP 531 Advanced Theory of Computation (3 credits) COMP 558 Fundamentals of Computer Vision (3 credits) MATH 222 Calculus 3 (3 credits) MATH 223 Linear Algebra (3 credits) MATH 224 Discrete Structures 1 (3 credits) LING 201 Introduction to Linguistics (3 credits) LING 330 Phonotics (3 credits) LING 330 Phonotics (3 credits) LING 331 Phonology 1 (3 credits) LING 331 Phonology 1 (3 credits) LING 350 Linguistic Aspects of Bilingualism (3 credits) LING 360 Introduction to Semantice (3 credits) LING 371 Syntax 1 (3 credits) LING 390 Neuroscience of Language (3 credits) LING 390 Neuroscience of Language (3 credits) LING 417 Topics at the Interfaces 1 (3 credits)	Computer Science COMP 206 Introduction to Software Systems (3 credits) COMP 250 Introduction to Computer Science (3 credits) COMP 280 History and Philosophy of Computing (3 credits) COMP 302 Programming Languages and Paradigms (3 credits) COMP 300 Programming Languages and Paradigms (3 credits) COMP 400 Honours Project in Computer Science (3 credits) COMP 400 Honours Project in Computer Science (3 credits) COMP 409 Concurrent Programming (3 credits) COMP 417 Introduction Robotics and Intelligent Systems (3 credits) COMP 421 Database Systems (3 credits) COMP 422 Artificial Intelligence (3 credits) COMP 526 Probabilistic Reasoning and AI (3 credits) COMP 527 Logic and Computation (3 credits) COMP 531 Advanced Theory of Computation (3 credits) COMP 546 Computational Perception (4 credits) COMP 548 Fundamentals of Computer Vision (3 credits) MATH 222 Calculus 3 (3 credits) MATH 223 Linear Algebra (3 credits) MATH 240 Discrete Structures 1 (3 credits) LING 201 Introduction to Speech Science (3 credits) LING 210 Introduction to Speech Science (3 credits) LING 210 Introduction to Speech Science (3 credits) LING 260 Meaning in Language (3 credits) (continued on Attachment 1B)
Continued on Attachment 1B)	

LING 440 Morphology (3 credits) LING 450 Laboratory Linguistics (3 credits) LING 451 Acquisition of Phonology (3 credits) LING 455 Second Language Syntax (3 credits) LING 461 Formal Methods in Linguistics (3 credits) LING 530 Acoustic Phonetics (3 credits) LING 531 Phonology 2 (3 credits) LING 555 Language Acquisition 2 (3 credits) LING 565 Pragmatics (3 credits) LING 571 Syntax 2 (3 credits) LING 590 Language Acquisition and Breakdown (3 credits) Philosophy NSCI 300 Neuroethics (3 credits) PHIL 304 Chomsky (3 credits) PHIL 306 Philosophy of Mind (3 credits) PHIL 310 Intermediate Logic (3 credits) PHIL 311 Philosophy of Mathematics (3 credits) PHIL 341 Philosophy of Science 1 (3 credits) PHIL 360 17th Century Philosophy (3 credits) PHIL 370 Problems in Analytic Philosophy (3 credits) PHIL 410 Advanced Topics in Logic 1 (3 credits) PHIL 411 Topics in Philosophy of Logic and Mathematics (3 credits) PHIL 415 Philosophy of Language (3 credits) PHIL 419 Epistemology (3 credits) PHIL 421 Metaphysics (3 credits) PHIL 441 Philosophy of Science 2 (3 credits) PHIL 470 Topics in Contemporary Analytic Philosophy (3 credits) PHIL 474 Phenomenology (3 credits) Psychology ANTH 440 Cognitive Anthropology (3 credits) MUMT 250 Music Perception and Cognition (3 credits) NSCI 201 Introduction to Neuroscience 2 (3 credits) PSYC 204 Introduction to Psychological Statistics (3 credits) PSYC 212 Perception (3 credits) PSYC 213 Cognition (3 credits) PSYC 301 Animal Learning & Theory (3 credits) PSYC 302 The Psychology of Pain (3 credits) PSYC 304 Child Development (3 credits) PSYC 305 Statistics for Experimental Design (3 credits) PSYC 310 Intelligence (3 credits) PSYC 311 Human Cognition and the Brain (3 credits) PSYC 315 Computational Psychology (3 credits) PSYC 316 Psychology of Deafness (3 credits) PSYC 318 Behavioural Neuroscience 2 (3 credits) PSYC 340 Psychology of Language (3 credits) PSYC 341 The Psychology of Bilingualism (3 credits) (continued on Attachment 1C)

Philosophy

NSCI 300 Neuroethics (3 credits) PHIL 306 Philosophy of Mind (3 credits) PHIL 310 Intermediate Logic (3 credits) PHIL 311 Philosophy of Mathematics (3 credits) PHIL 341 Philosophy of Science 1 (3 credits) PHIL 354 Plato (3 credits) PHIL 355 Aristotle (3 credits) PHIL 360 17th Century Philosophy (3 credits) PHIL 361 18th Century Philosophy (3 credits) PHIL 367 19th Century Philosophy (3 credits) PHIL 370 Problems in Analytic Philosophy (3 credits) PHIL 410 Advanced Topics in Logic 1 (3 credits) PHIL 411 Topics in Philosophy of Logic and Mathematics (3 credits) PHIL 415 Philosophy of Language (3 credits) PHIL 419 Epistemology (3 credits) PHIL 421 Metaphysics (3 credits) PHIL 441 Philosophy of Science 2 (3 credits) PHIL 470 Topics in Contemporary Analytic Philosophy (3 credits) PHIL 474 Phenomenology (3 credits) Psychology ANTH 440 Cognitive Anthropology (3 credits) MUMT 250 Music Perception and Cognition (3 credits) PSYC 204 Introduction to Psychological Statistics (3

credits) <u>PSYC 211 Introductory Behavioural Neuroscience (3</u> <u>credits)</u>

PSYC 212 Perception (3 credits) PSYC 213 Cognition (3 credits) PSYC 302 The Psychology of Pain (3 credits) PSYC 304 Child Development (3 credits) PSYC 305 Statistics for Experimental Design (3 credits) PSYC 311 Human Cognition and the Brain (3 credits) PSYC 315 Computational Psychology (3 credits) PSYC 315 Computational Psychology (3 credits) PSYC 317 Genes and Behaviour (3 credits) PSYC 318 Behavioural Neuroscience 2 (3 credits) PSYC 340 Psychology of Language (3 credits) PSYC 341 The Psychology of Bilingualism (3 credits)

(continued on Attachment 1C)

PSYC 352 Cognitive Psychology Laboratory (3 credits) PSYC 342 Hormones and Behaviour (3 credits) PSYC 406 Psychological Tests (3 credits) PSYC 352 Cognitive Psychology Laboratory (3 credits) PSYC 410 Special Topics in Neuropsychology (3 PSYC 406 Psychological Tests (3 credits) PSYC 410 Special Topics in Neuropsychology (3 credits) PSYC 413 Cognitive Development (3 credits) credits) PSYC 470 Memory and Brain (3 credits) PSYC 413 Cognitive Development (3 credits) PSYC 501 Auditory Perception (3 credits) PSYC 427 Sensorimotor Behaviour (3 credits) PSYC 506 Cognitive Neuroscience of Attention (3 PSYC 470 Memory and Brain (3 credits) PSYC 501 Auditory Perception (3 credits) credits) PSYC 522 Neurochemistry and Behaviour (3 credits) PSYC 506 Cognitive Neuroscience of Attention (3 PSYC 526 Advances in Visual Perception (3 credits) credits) PSYC 529 Music Cognition (3 credits) PSYC 514 Neurobiology of Learning and Memory (3 PSYC 532 Cognitive Science (3 credits) credits) PSYC 537 Advanced Seminar in Psychology of PSYC 522 Neurochemistry and Behaviour (3 credits) Language (3 credits) PSYC 526 Advances in Visual Perception (3 credits) PSYC 545 Topics in Language Acquisition (3 credits) PSYC 529 Music Cognition (3 credits) PSYC 561 Methods: Developmental Psycholinguistics PSYC 531 Structural Equal Models (3 credits) (3 credits) PSYC 532 Cognitive Science (3 credits) PSYC 536 Correlational Techniques (3 credits) PSYC 537 Advanced Seminar in Psychology of Neuroscience Language (3 credits) PSYC 538 Categorization, Communication & * Students select either PHGY 311 or BIOL 306, but not Consciousness (3 credits) hoth ** Students select either BIOL 514 or PSYC 514, but not PSYC 541 Multilevel Modelling (3 credits) both PSYC 545 Topics in Language Acquisition (3 credits) *** Students select either NSCI 200 or PHGY 209, but not PSYC 561 Methods: Developmental Psycholinguistics (3 credits) both. Neuroscience ANAT 321 Circuitry of the Human Brain (3 credits) BIOL 200 Molecular Biology (3 credits) ** Students select either BIOL 514 or PSYC 514, but not BIOL 201 Cell Biology and Metabolism (3 credits) both BIOL 306 Neural Basis of Behaviour (3 credits) * *** Students select either NSCI 200 or PHGY 209, but not BIOL 507 Animal Communication (3 credits) both. BIOL 514 Neurobiology Learning and Memory (3 credits) ** BIOL 530 Advances in Neuroethology (3 credits) ANAT 321 Circuitry of the Human Brain (3 credits) BIOL 532 Developmental Neurobiology Seminar (3 BIOL 200 Molecular Biology (3 credits) BIOL 201 Cell Biology and Metabolism (3 credits) credits) BIOL 588 Advances in Molecular/Cellular Neurobiology BIOL 306 Neural Basis of Behaviour (3 credits) (3 credits) BIOL 307 Behavioural Ecology (3 credits) NEUR 310 Cellular Neurobiology (3 credits) BIOL 320 Evolution of Brain and Behaviour (3 credits) NSCI 200 Introduction to Neuroscience 1 (3 credits) *** BIOL 507 Animal Communication (3 credits) NSCI 201 Introduction to Neuroscience 2 (3 credits) BIOL 514 Neurobiology Learning and Memory (3 NSCI 300 Neuroethics (3 credits) credits) ** PHGY 209 Mammalian Physiology 1 (3 credits) *** BIOL 530 Advances in Neuroethology (3 credits) BIOL 532 Developmental Neurobiology Seminar (3 (continued on Attachment 1D) credits) BIOL 580 Genetic Approaches to Neural Systems (3 credits) BIOL 588 Advances in Molecular/Cellular Neurobiology (3 credits) NEUR 310 Cellular Neurobiology (3 credits) NSCI 200 Introduction to Neuroscience 1 (3 credits) *** NSCI 300 Neuroethics (3 credits) PHGY 209 Mammalian Physiology 1 (3 credits) *** (continued on Attachment 1D)

PHGY 311 Channels, Synapses & Hormones (3 credits) PHGY 311 Channels, Synapses & Hormones (3 credits) * PHGY 314 Integrative Neuroscience (3 credits) PHGY 314 Integrative Neuroscience (3 credits) PHGY 556 Topics in Systems Neuroscience (3 credits) PHGY 556 Topics in Systems Neuroscience (3 credits) PSYC 211 Introductory Behavioural Neuroscience (3 PSYC 211 Introductory Behavioural Neuroscience (3 credits) PSYC 302 The Psychology of Pain (3 credits) credits) PSYC 302 The Psychology of Pain (3 credits) PSYC 311 Human Cognition and the Brain (3 credits) PSYC 311 Human Cognition and the Brain (3 credits) PSYC 317 Genes and Behaviour (3 credits) PSYC 318 Behavioural Neuroscience 2 (3 credits) PSYC 317 Genes and Behaviour (3 credits) PSYC 318 Behavioural Neuroscience 2 (3 credits) PSYC 342 Hormones and Behaviour (3 credits) PSYC 342 Hormones and Behaviour (3 credits) PSYC 410 Special Topics in Neuropsychology (3 PSYC 410 Special Topics in Neuropsychology (3 credits) PSYC 427 Sensorimotor Behaviour (3 credits) credits) PSYC 427 Sensorimotor Behaviour (3 credits) PSYC 444 Sleep Mechanisms and Behaviour (3 credits) PSYC 444 Sleep Mechanisms and Behaviour (3 credits) PSYC 506 Cognitive Neuroscience of Attention (3 PSYC 502 Psychoneuroendocrinology (3 credits) credits) PSYC 506 Cognitive Neuroscience of Attention (3 PSYC 514 Neurobiology of Learning and Memory (3) credits) credits) * PSYC 514 Neurobiology of Learning and Memory (3 PSYC 522 Neurochemistry and Behaviour (3 credits) PSYC 526 Advances in Visual Perception (3 credits) credits) * PSYC 532 Cognitive Science (3 credits) PSYC 522 Neurochemistry and Behaviour (3 credits) PSYC 526 Advances in Visual Perception (3 credits) PSYT 301 Issues in Drug Dependence (3 credits) PSYC 532 Cognitive Science (3 credits) PSYT 500 Advances: Neurobiology of Mental Disorders PSYT 301 Issues in Drug Dependence (3 credits) (3 credits) PSYT 500 Advances: Neurobiology of Mental Disorders PSYT 502 Brain Evolution and Psychiatry (3 credits) PSYT 515 Advanced Studies in Addiction (3 credits) (3 credits) PSYT 502 Brain Evolution and Psychiatry (3 credits) PSYT 515 Advanced Studies in Addiction (3 credits) **Research Course Research Course** COGS 401 Research Cognitive Science 1 (6 credits) COGS 401 Research Cognitive Science 1 (6 credits)