DATE SUBMITTED _10/11/04_

COLLEGE/SCHOOL _ARHU_

DEPARTMENT/PROGRAM _PHIL_

PROPOSED ACTION (A separate form for each) ADD _____ DELETE _____ CHANGE _X_

DESCRIPTION (Provide a succinct account of the proposed action. Details should be provided in an attachment. Provide old and new sample programs for curriculum changes.)

Changing PHIL 470 to PHIL 271 in statement of logic requirement for Ph.D.

JUSTIFICATION/REASONS/RESOURCES (Briefly explain the reason for the proposed action. Identify the source of new resources that may be required. Details should be provided in an attachment.)

As a result of changes in the Departmental logic sequence both 271 and 470 are becoming significantly more difficult in content. The appropriate course to fulfill the graduate logic requirement is now 271.

APPROVAL SIGNATURES

1. Department Committee Chair ___________________________ DATE __10/11/04__

2. Department Chair ___________________________ 10/13/04

3. College/School PCC Chair ___________________________ 10/21/04

4. Dean ___________________________ 10-21-04

5. Dean of the Graduate School (if required) ___________________________ 10-12-04

6. Chair, Senate PCC ___________________________ 11/12/04

7. Chair of Senate ___________________________ 11/12/04

8. Vice President for Academic Affairs & Provost ___________________________ 11/12/04
MEMORANDUM

TO: James F. Harris  
Dean, College of Arts and Humanities

FROM: Victor Korenman  
Associate Provost for Academic Planning and Programs

SUBJECT: Proposal to Modify the Curriculum of the Ph.D. Program in Philosophy  
(PCC Log No. 04017)

At its meeting on November 12, 2004, the Senate Committee on Programs, Curricula, and Courses approved your proposal to slightly modify the curriculum of the Ph.D. program in Philosophy by changing PHIL470 to PHIL271 in the statement of Logic requirement. A copy of the approved proposal is enclosed.

The change is effective in Spring 2005. The College should ensure that the new requirement is fully described in the Graduate Catalog and in all relevant descriptive materials, and that all advisors are informed.

VK:sfm
Enclosure

Cc: Dr. Sylvester Gates, Chair, Senate PCC
    Dr. Mary Giles, University Senate
    Ms. Barbara Hope, Data Administration
    Ms. Trudy Lindsey, Graduate School
    Dr. Charles Rutherford, College of Arts and Humanities
    Ms. Anne Turkos, Archives
    Dr. Linda Yokoi, Records & Registrations
October 13, 2004

Charles Rutherford  
Associate Dean, Arts and Humanities  
Francis Scott Key

Dear Charley

I am enclosing four sets of papers of PCC business. (Since each item will no doubt get discussed separately, I am enclosing a copy of this letter with each item.) They are: (a) a proposal for a minor modification in our Graduate Program; (b) a proposal for a change in the content and prerequisites for PHIL271 Symbolic Logic; (c) a proposal for a change in the content and prerequisites for PHIL470 Logical Theory; and (d) a proposal to drop PHIL477 Logical Theory II.

Rationale

The rationale for these changes is as follows. The department’s regular lower-level logic offerings are 170 and 271 (each is CORE MS; there are also some other lower-level logic courses on the books, offered infrequently). We have become increasingly aware that there is now significant overlap between the two courses (confirmed in the feedback we have received from our students in the last year or two). We had originally designed a logic sequence that ran: 170, 271, 470, 477. But over the years (responding, in part, to the much increased quality of the students entering the university) the content of 170 had drifted upwards, in terms both of difficulty and the amount of material actually covered. (These changes were nevertheless fully consistent with the catalog description for 170; so no formal change is requested here.) As a result, students have complained that when taking 271 after 170, they have found themselves revisiting much of the same material. This is obviously an unsatisfactory situation, requiring us to make some changes.

At a recent meeting of all the department’s logic teachers we discussed this issue extensively. One option would have been to ‘dumb down’ 170 again. But none of us felt that this was appropriate: we want to offer our students courses that will challenge and extend them. The other option (and the option we are herein proposing) is to make 271 significantly more advanced, picking up from where 170 leaves off (after a week or two of revision) and including more advanced treatments of predicate logic with identity and set theory. This in turn means that 271 now needs prerequisites (it didn’t have any before). We have settled on PHIL170, CMSC250, or permission of department.
These changes in turn mean that 470 can, and should, become significantly more advanced in its content. As previously, familiarity with the material covered in 271 is required as a prerequisite. But with that course now being much more advanced, 470 can now deepen and expand to incorporate topics previously taught (very intermittently, it should be said) in 477. Accordingly, we are proposing that 477 should be dropped, and that 470 should receive a revised catalog description.

Finally, all these changes necessitate a change in our Graduate Program regulations. Previously we had required 470 (or equivalent) in fulfillment of the program’s logic requirement. (A copy of our regulations is enclosed.) But the new 470 will be too advanced to fulfill that foundational role; whereas the new 271 will serve the purpose admirably. The new statement of the logic requirement will read as follows in the paragraph below. (The only changes are the substitution of 271 for 470 throughout, and the addition of the final sentence.)

**Logic Requirement**

A student can satisfy the Logic Requirement in one of four ways: (i) by completing Philosophy 271 (Symbolic Logic); (ii) by completing the final exam for that course, even though the student did not enroll in the course; (iii) by completing a more advanced course in logic offered by the Department; or (iv) by demonstrating completion elsewhere of course work equivalent to or more advanced than Philosophy 271. Note that, since 271 is a lower-level course, it cannot be counted amongst the 12 courses required for completion of the course-work element of the program.

I trust that you will understand the rationale for these changes, and will find all the papers to be in order. Please get in touch with me if I can provide you with further information.

Yours with best wishes

Peter Carruthers
Professor and Chair
Phil 271: Symbolic Logic

Course Description: In this course in symbolic deductive logic, we introduce a symbolic language for sentential logic (the branch of logic that takes sentences as the fundamental units of logical analysis), and for predicate logic (the branch of logic that takes subsentence units – predicates and individual terms – as the fundamental units of logical analysis). In terms of this symbolic language – first-order logic with identity – we develop formal techniques for assessing the logical relations among sentences and groups of sentences in a wide range of arguments. The course also covers the standard theory of definitions, and the elementary theory of sets, functions, and relations.

Prerequisite: PHIL 170 or CMSC 250 or permission of department


Grades: Grades are assigned on the basis of two class tests (each counting 15% of the final grade), a midterm exam (35% of the final grade), and a final exam (35% of the final grade).

Syllabus:
1. Basic notions of logic: deductive validity and deductive soundness, logical consistency, logical truth, logical falsity, logical indeterminacy, logical equivalence.


Philosophy 470: Logical Theory

Description

This course will treat a selection of the most important topics in modern logic: alternative proof-theoretic presentations of logical systems, completeness proofs for classical propositional and first-order logic, some basic computability theory, basic limitative results (such as Gödel’s incompleteness theorems), and some results concerning second-order logic. The primary focus of the course is a thorough technical study of these fundamental topics, but we will also discuss some of the philosophical issues they raise.

Prerequisite: Thorough familiarity with first-order logic with identity, and with the elementary theory of sets, functions, and relations.

Time and place

The class meets on Tuesdays and Thursdays, from 3:30 till 4:45, in Skinner Hall 1115.

Office, phones, etc.


Course work

There will be regular assigned exercises, and at least two exams, which may have the form of take-home problem sets. Students and auditors will be asked to help teach the course by giving short presentations of straightforward material.

Materials

Most of the topics to be covered are treated in the following books, available in the bookstore and on reserve:


From time to time, other papers will be made available through the library or in the reading room.
Topics

1. Propositional logic (classical, intuitionistic, modal, relevance).
   (a) Fitch style natural deduction style formulations.
   (b) Hilbert-Frege style axiomatic formulations.
   (c) Deduction theorem; equivalence of formulations.
   (d) Two-valued semantics for classical logic; semantic concepts.
   (e) Soundness, completeness (Henkin style), compactness, decidability.

2. First-order logic I.
   (a) Fitch style natural deduction style formulations.
   (b) Hilbert-Frege style axiomatic formulations.
   (c) Equivalence of formulations.
   (d) Semantics for first-order logic.
   (e) Soundness, completeness (Henkin style), compactness.
   (f) Elimination of function symbols.

3. Computability.
   (a) Algorithms, URM-computability.
   (b) Other approaches to computability; Church’s thesis.
   (c) Numbering computable functions.
   (d) Universal programs, normal form; the s-m-n theorem.
   (e) Undecidability, the halting problem.
   (f) Decidability, recursive and r.e. sets.

4. First-order logic II.
   (a) Theories and models.
   (b) Löwenheim-Skolem theorems (upward, downward).
   (c) Isomorphism and elementary equivalence.
   (d) Completeness, categoricity.
   (e) Non-standard models of arithmetic.

5. Basic limitative results.
   (a) Representability, definability.
   (b) Axiomatizable theories.
   (c) Diagonal lemma; undefinability lemma.
   (d) Church’s theorem.
(e) Gödel’s first incompleteness theorem.
(f) Tarski’s theorem.
(g) Provability predicates.
(h) Löb’s theorem.
(i) Gödel’s second incompleteness theorem.


(a) Semantics.
(b) Failure of Löwenhein-Skolem.
(c) Failure of Compactness.
(d) Second-order Peano arithmetic; categoricity.
(e) Validity is not r.e.