

SEMANTICS 2

Fall 2014

(last revised: September 1, 2014)

| | COURSE | INSTRUCTOR |
|-----------|----------------------------------|---|
| NAME: | LING 460 | Brendan S. Gillon |
| LOCATION: | 1085 Docteur-Penfield rm. 002 | 1085 Docteur-Penfield rm. 119 |
| TIME: | CLASS HOURS MWF 10h35–11h25 | OFFICE HOURS: by appointment, and t.b.a. |
| CONTACT: | | tel. no.: 514 398 4868 |

READINGS:

Carpenter, Bob 1997 *Type logical semantics*. Cambridge, Massachusetts: The MIT Press. The textbook is available at *The Word* (469 Milton street). The MIT Press is selling the hardbound edition at the paperbound price. *The Word* accepts only a check or cash.

Gillon, Brendan 1994 *Grammatical structure and its interpretation: an introduction to natural language semantics*. The relevant chapters will be made available through mycourses.

STATEMENT FROM THE ADMINISTRATION:

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AIMS and METHOD OF EVALUATION:

The aim of the course (LING 460: Semantics 2) is to introduce students to the two most fundamental tools in semantic theory, namely, Lambek calculus and the Lambda calculus, a thorough understanding of which is necessary for advanced work in semantic theory. The Lambek calculus, due to Jim Lambek, professor emeritus of McGill University's Department of Mathematics and Statistics, is a generalization of the propositional calculus and it has applications in a variety of domains in mathematics, and perhaps surprisingly, in linguistics too, where it provides the mathematics of syntactic categories. In other words, viewed in the right way, the propositional calculus can be used to formalize the syntactic categories of natural language expressions. The Lambda calculus is a notation developed by Alonzo Church to represent all functions in mathematics. It is widely used by natural language semanticists to express the values which can be associated with the expressions of a natural language. It turns out that there is a deep and elegant connection between the Lambek calculus and the Lambda calculus, which natural language semanticists find very useful to exploit. This connection is known as the Curry-Howard isomorphism.

Making all this clear as well as showing how these tools apply in an enlightening way to a variety of natural language expressions, including those involving coordination, quantificational expressions and comparative expressions, is what the course aims to do.

The course presupposes nothing other than what is covered in the introductory logic course (PHIL 210). Anyone with this much preparation is welcome to enrol.

Success in the course requires that one is at ease with, and not at all a whiz at, elementary logic and that one has the self discipline to work regularly at studying the material. Assessment is based on problem sets and class participation only. I anticipate giving ten problem sets. (All written work may be submitted either in English or in French.)

Last year, a student who was an undergraduate major in English at McGill University and had taken only the introductory logic course (PHIL 210), took this course and did extremely well. The same student, who has gone on to graduate studies in linguistics at Oxford University, reports that he is 'ahead of the game' as a result of this course when he started his studies there.

This fall will be the third time the course is offered. The course will continue to use Bob Carpenter's textbook, *Type logical semantics*. This book, though it is an introductory textbook, is a little on the steep side. To ease the gradient, I have written notes designed to reduce the slope in going from the level of introductory logic to the Carpenter textbook.

PROPOSED SYLLABUS

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| WEEK 1 (01 Sep): | propositional logic | Gillon ch. 6, §2.2 |
| WEEK 2 (08 Sep): | propositional logic | Gillon ch. 6, §2.2 |
| WEEK 3 (15 Sep): | classical quantificational logic | Gillon ch. 10.3.1.4, 10.3.2 |
| WEEK 4 (22 Sep): | enriched quantificational logic | Gillon ch. 11 |
| WEEK 5 (29 Sep): | lambda calculus | Carpenter ch. 2.1–2.4 |
| WEEK 6 (06 Oct): | lambda calculus | Carpenter ch. 2.5–2.7 |
| WEEK 7 (13 Oct): | higher order logic | Carpenter ch. 3.1–3.5 |
| WEEK 8 (20 Oct): | applicative categorial grammar | Carpenter ch. 4.1–4.6 |
| WEEK 9 (27 Oct): | Lambek calculus | Carpenter ch. 5.1–5.4 |
| WEEK 10 (03 Nov): | coordination | Carpenter ch. 6 |
| WEEK 11 (10 Nov): | quantifiers and scope | Carpenter ch. 7.1–7.8 |
| WEEK 12 (17 Nov): | comparatives | Carpenter ch. 7.12 |
| WEEK 13 (24 Nov): | to be determined | |