

FORMAL METHODS

Fall 2011

(last revised: 8 sep 2011)

COURSE

LING 461/661

1085 Docteur-Penfield
rm. 002

TIME:

MWF 8h35–9h25

INSTRUCTOR

Brendan S. Gillon

1085 Docteur-Penfield
rm. 119

OFFICE HOURS:

t.b.a. and

by appointment

tel. no.: 514 398 4868

AIM OF THE COURSE:

The aim of the course is to prepare students so that they can understand the mathematics used in the literature in syntax, but especially in semantics, and acquire a degree of mathematical maturity. Stress is put on understanding fundamental concepts and doing informal proofs. Topics covered are: sets and operations on them, family of sets and operations on them, mathematical induction, relations and functions, partial orders and lattices.

COURSE MATERIAL:

- Abbott, James C. 1969 *Sets, lattices and Boolean algebras*. Prentice-Hall.
- Stoll, Robert R. 1963 *Set theory and logic*. Dover Publications.
- Gillon, Brendan S. 2008 *Introduction to sets, orders and lattices*. Unpublished manuscript.

EVALUATION: 10 problem sets (10% each)

PROCEDURES:

- NO LATE PROBLEM SETS WILL BE ACCEPTED. Each problem set must be turned in at the beginning of the class on its due date.
- NO MAKE-UP EXAMINATIONS WILL BE GIVEN to anyone who does not have a certified medical excuse.
- NO ANSWER TO ANY GRADED PROBLEM OR EXAMINATION QUESTION WILL BE RE-ASSESSED, unless:
 1. the answer is written in ink;
 2. it has not been written over; and
 3. the answer is clearly marked as such.
- Assignments and exams be written either in ENGLISH or in FRENCH.

McGill University values academic integrity. Therefore all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the code of student conduct and disciplinary procedures. (See www.mcgill.ca/integrity for more information.)

L'Université McGill attache une haute importance à l'honnêteté académique. Il incombe par conséquent à tous les étudiants de comprendre ce que l'on entend par tricherie, plagiat et autres infractions académiques, ainsi que les conséquences que peuvent avoir de telles actions, selon le Code de conduite de l'étudiant et des procédures disciplinaires. (Pour de plus amples renseignements, veuillez consulter le site www.mcgill.ca/integrity.)

SYLLABUS

WEEK 1 (2 Sep):		
WEEK 2 (9 Sep):	sets	Stoll 1963 ch. 1.1–1.5 Abbott 1963 ch. 2.10–2.11 Gillon 2008 ch. 1, ch. 2
WEEK 3 (16 Sep):	informal axiomatic set theory	Abbott 1969 ch. 1 Stoll 1963 ch. 7.1–7.5
WEEK 4 (23 Sep):	relations and functions	Abbott 1969 ch. 2.1–2.4 Stoll 1963 ch. 1.6–1.9 Gillon 2008 ch. 3, ch. 5, ch. 6
WEEK 5 (30 Sep):	families of sets and induction	Abbott 1969 ch. 2.14 Stoll 1963 ch. 1.10 Gillon 2008 ch. 4.
WEEK 6 (7 Oct):	orders	Abbott 1969 ch. 4.1–4.4 Stoll 1963 ch. 1.11 Gillon 2008 ch. 8
WEEK 7 (14 Oct):	algebra	Stoll 1963 ch. 8.1–8.5 Abbott 1969 ch. 2.5–2.9 Gillon 2008 ch. 7.5
WEEK 8 (21 Oct):	lattices	Abbott 1969 ch. 4.5–4.8 Gillon 2008 ch. 9
WEEK 9 (28 Oct):	Boolean algebras	Abbott 1969 ch. 6.1–6.3 Stoll 1963 ch. 6.1–6.3 Gillon 2008 ch. 10

WEEK 10 (4 Nov):	Boolean algebras	Abbott 1969 ch. 6.4–6.5 Gillon 2008 ch. 10
WEEK 11 (11 Nov):	Boolean algebras	Abbott 1969 ch. 6.6–6.7 Stoll 1963 ch. 6.4–6.5 Gillon 2008 ch. 10
WEEK 12 (18 Nov):	Boolean algebras	Abbott 1969 ch. 6.9–6.11 Stoll 1963 ch. 6.7 Gillon 2008 ch. 10
WEEK 13 (25 Nov):	Boolean algebra	Stoll 1963 ch. 6.6, 6.8–6.9 Gillon 2008 ch. 10