

Debbie Hanlin

From: Julie McGory [jmcgory@ling.ohio-state.edu]
Sent: Friday, March 28, 2008 3:16 PM
To: asccurrofc@osu.edu
Cc: Michael White
Subject: New Course Request Ling684.03

Attachments: 684.03_syllabus.pdf; course_req_ling684.03.pdf



684.03_syllabus.course_req_ling
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This email is for Deb Hanlin.

Hello Deb,

Attached is a syllabus (pdf) and new course request form (signed by our chair, Beth Hume, and copied as a pdf here) for Ling684.03. This is a new graduate level course that Dr. Michael White has developed as a continuation of a series of computational linguistics courses, 684.01, 684.02, and this new course proposed as 684.03. I've cc'd Mike on this email so that you have both of us as contacts if you should have any questions.

Shall I send you the original signed course request form?

Take care,

Julie

The Ohio State University
Colleges of the Arts and Sciences New Course Request

Linguistics

Academic Unit

Linguistics

Book 3 Listing (e.g., Portuguese)

684.03 Computational Semantics

Number

Title

COMP SEMANTICS

G

5

18-Character Title Abbreviation

Level

Credit Hours

Summer

Autumn **X**

Winter

Spring

Year **2008**

Proposed effective date, choose one quarter and put an "X" after it; and fill in the year. See the OAA curriculum manual for deadlines.

A. Course Offerings Bulletin Information

Follow the instructions in the OAA curriculum manual. If this is a course with decimal subdivisions, then use one New Course Request form for the generic information that will apply to all subdivisions; and use separate forms for each new decimal subdivision, including on each form the information that is unique to that subdivision. If the course offered is less than a quarter or a term, please complete the Flexibly Scheduled/Off Campus/Workshop Request form.

Description (*not to exceed 25 words*): **Introduction to computational methods for constructing semantic representations for fragments of natural language and performing inference with such representations.**

Quarter offered: **Autumn**

Distribution of class time/contact hours: **2 2-hr cl.**

Quarter and contact/class time hours information should be omitted from Book 3 publication (yes or no):

Prerequisite(s): **684.01 or equiv.**

Exclusion or limiting clause: **None**

Repeatable to a maximum of _____ credit hours.

Cross-listed with: **None**

Grade Option (Please check): Letter ☒ S/U ☐ Progress ☐ What course is last in the series? **684.03**

Honors Statement: Yes ☐ No ☒

GEC: Yes ☐ No ☒

Admission Condition

Off-Campus: Yes ☐ No ☒

EM: Yes ☐ No ☒

Course: Yes ☐ No ☒

Embedded Honors Statement: Yes ☐ No ☒

Service Learning Course*: Yes ☐ No ☒ *To learn more about this option, please visit

<http://artsandsciences.osu.edu/currofc/>

Other General Course Information:

(e.g. "Taught in English." "Credit does not count toward BSBA degree.")

B. General Information

Subject Code **160102** Subsidy Level (V, G, T, B, M, D, or P) **M**

If you have questions, please email Jed Dickhaut at dickhaut.1@osu.edu.

1. Provide the rationale for proposing this course:

Introduce students to the principal methods for constructing and reasoning with semantic representations for fragments of natural language in a way that allows students to gain experience in problem solving, to discover the properties of language most relevant to logical reasoning, and to be in a better position to appreciate ongoing developments in computational semantics.

2. Please list Majors/Minors affected by the creation of this new course. Attach revisions of all affected programs. This course is (check one): ☐ Required on major(s)/minor(s) ☐ A choice on major(s)/minors(s)
☒ An elective within major(s)/minor(s) ☐ A general elective:

Of particular interest to graduate students in computational linguistics, or advanced undergraduates interested in pursuing graduate studies in the area.

3. Indicate the nature of the program adjustments, new funding, and/or withdrawals that make possible the implementation of this new course.

Department of linguistics faculty will be assigned to teach this course.

No general administrative or funding adjustments necessary.

4. Is the approval of this request contingent upon the approval of other course requests or curricular requests?

Yes ☐ No ☒ List:

5. If this course is part of a sequence, list the number of the other course(s) in the sequence: 684.01, 684.02

6. Expected section size: 8 Proposed number of sections per year: 1

7. Do you want prerequisites enforced electronically (see OAA manual for what can be enforced)? Yes ☐ No ☒

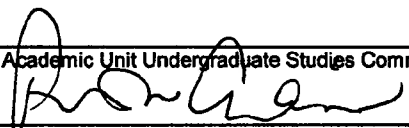
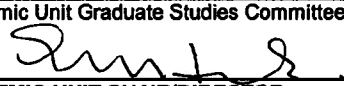
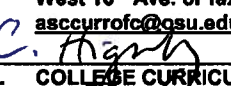

8. This course has been discussed with and has the concurrence of the following academic units needing this course or with academic units having directly related interests (List units and attach letters and/or forms):

Not Applicable ☐

Computer Science & Engineering - Yes See attached Contacted by Linguistics 3/28/08 J.M.

9. Attach a course syllabus that includes a topical outline of the course, student learning outcomes and/or course objectives, off-campus field experience, methods of evaluation, and other items as stated in the OAA curriculum manual and e-mail to ascurofc@osu.edu.

Approval Process The signatures on the lines in ALL CAPS (e.g. ACADEMIC UNIT) are required.

1. Academic Unit Undergraduate Studies Committee Chair	Printed Name	Date
	Peter W. Culicover	3/28/08
2. Academic Unit Graduate Studies Committee Chair	Printed Name	Date
	E. Hume	3/28/08
3. ACADEMIC UNIT CHAIR/DIRECTOR	Printed Name	Date
4. After the Academic Unit Chair/Director signs the request, forward the form to the ASC Curriculum Office, 4132 Smith Lab, 174 West 18 th Ave. or fax it to 688-5678. Attach the syllabus and any supporting documentation in an e-mail to ascurofc@osu.edu . The ASC Curriculum Office will forward the request to the appropriate committee.		
5. COLLEGE CURRICULUM COMMITTEE	Printed Name	Date
	C. HIGHLEY	5/30/08
6. ARTS AND SCIENCES EXECUTIVE DEAN	Printed Name	Date
	David Adelman	6-3-08
7. Graduate School (if appropriate)	Printed Name	Date
8. University Honors Center (if appropriate)	Printed Name	Date
9. Office of International Education (if appropriate)	Printed Name	Date
10. ACADEMIC AFFAIRS	Printed Name	Date

Date: Tue, 01 Apr 2008 16:48:24 -0400

From: Bruce W. Weide <weide@cse.ohio-state.edu>

To: jmcgory@ling.ohio-state.edu; Cc: Chris Brew <brew.2@osu.edu>, Michael White <mwhite@ling.ohio-state.edu>

Subject: Ling 684.03 concurrence

Hi Julie,

Please consider this e-mail to constitute concurrence from CSE for the proposed Ling 684.03.

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Cheers,

-Bruce

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Bruce W. Weide

Professor and Associate Chair

Dept. of Computer Science and Engineering

The Ohio State University

2015 Neil Ave.

Columbus, OH 43210-1277

HUM CCC minutes 4-18 08

1. Linguistics 684.03 – Sent back

- i. The syllabus is a little thin.
- ii. Homework has to be more specific, scope and what specifically is involved.
- iii. Should include an OSU grading scale, academic misconduct, disability statements in the syllabus
- iv. Need a week by week schedule with topical headings

Attached you will find a new version of the 684.03 syllabus:

- 1. The homework is now more specific. Each assignment now includes readings and a description of the exercises assigned.
- 2. We have included an OSU grading scale, and made the academic misconduct and disability statement more visible. (We had included this in the original syllabus, but it was overlooked by the reviewers.)
- 3. Also, the syllabus now includes a week by week schedule with topic headings.

Julie McGory

Computational Semantics

Ling 684.03, 2008

TR 11:30–1:18, BI 0141

Instructor: Michael White

<http://www.ling.ohio-state.edu/~mwhite/>

I. Description

In this course, students will learn how to use Prolog to construct semantic representations for fragments of natural language and perform inference with these representations. At the end of the course, students should be in a good position to appreciate ongoing developments in computational semantics.

The course will be based primarily on **two books** by Patrick Blackburn & Johan Bos, *Representation and Inference for Natural Language: A First Course in Computational Semantics* and *Working with Discourse Representation Theory: An Advanced Course in Computational Semantics*.

Prerequisites: Ling 684.01 or equivalent. The course is open to advanced undergraduate and graduate students.

II. Objectives

Student in the course will have an opportunity to:

- Become familiar with the principal terminology, concepts and techniques of computational semantics.
- Learn how to automatically construct and reason with semantic representations of natural language.
- Discover the properties of natural language most relevant to logical reasoning.
- Gain experience in Prolog programming and problem solving.

dialogs, including the representation of lexical knowledge, and the role of model checking in answering questions.

Weeks 7–8 Discourse Construction: constructing Discourse Representation Theory's DRSs (Discourse Representation Structures) and translating them to first-order logic.

HW 5 Assignment: Exercises 1.1.2, 1.1.3, 1.3.1, 1.3.2, 2.2.4, and 2.2.7 from B&B Vol. II, Chapters 1-2. Ex. 1.3.2 is a bonus item. These exercises cover the accessibility of discourse referents in comparison to bound variables in first-order logic, translating from first-order logic to DRSs, representing the semantics of lexical entries, and implementing the merge operation in Prolog.

Weeks 8–9 Pronoun resolution: resolving pronouns to accessible antecedents and using ontologies in inference.

HW 6 Assignment:

1. Will the binding constraints on pronouns work with ditransitives like 'give'? Why or why not? Extra credit: Propose and implement an enhancement to the binding constraints that works with 'give'. Show that it works with reflexive and nonreflexive pronouns in both the double object and NP PP-to frames.
2. Make the necessary changes to add the determiner 'another'.
3. Make the necessary changes to add the adverb 'again' as a VP modifier. Should its presupposition be handled the same way as 'too'?
4. With 'If Mia is married, then her husband is out of town', local informativity constraints should make global accommodation of 'her husband' dispreferred. What changes to the code would be needed to get this to work as desired? Extra credit: Implement the necessary changes.

Weeks 9–10 Presupposition and Accommodation: implementing van der Sandt's algorithm for presupposition projection and accommodation.

III. Syllabus

A. Topics

Weeks 1–2 First Order Logic: using first-order logic as a tool for computational semantics.

HW 1 Assignment: Exercises 1.1.6, 1.1.10, 1.1.14, 1.1.18, 1.2.3, 1.2.6, 1.3.6-1.3.10, and 1.3.12 from Blackburn & Bos Vol. I, Chapter 1. Problems 1.2.3 and 1.3.9 are for bonus points. These exercises cover the definitions of first-order models and satisfaction, exclusive or, bound variables, uniqueness and equality, logical equivalence, consistency and informativity, and model checking in Prolog.

Weeks 2–3 Constructing Semantic Representations: using the lambda calculus to construct semantic representations, compared to unification-based approaches.

HW 2 Assignment: Exercises 2.4.2-2.4.5 and 2.5.1-2.5.4 from B&B Chapter 2. Ex. 2.5.4 is a bonus item. These exercises cover lambda expressions for lexical entries, alpha and beta conversion in Prolog, basic grammar engineering, and the semantics of copula verbs.

Weeks 4–6 Scope Ambiguities: handling scope ambiguities with Cooper storage and underspecified representations.

HW 3 Assignment: Exercises 3.3.4-3.3.5, 3.3.7, and 3.4.1-3.4.3 from B&B Chapter 3. Ex. 3.4.3 is a bonus question. These exercises cover implementing Cooper storage in Prolog, scope islands, first-order representations of different scope readings, and implementing hole semantics in Prolog.

Weeks 6–7 First-Order Inference: using first-order inference with theorem provers and model builders.

HW 4 Assignment: Exercises 6.4.1, 6.5.4, 6.6.1, 6.6.3, 6.7.4, and 6.7.5 from B&B Chapter 6. Ex. 6.7.5 is a bonus question. These exercises cover the use of first-order inference to help interpret sentences in simple

B. Readings

The first **Blackburn & Bos** book is out in paperback and available from various booksellers. Their second book is available in **draft form**.

There will also be additional readings of primary sources assigned periodically, and listed below.

Semantic composition via unification

- Robert C. Moore. 1989. **Unification-Based Semantic Interpretation**. In *Proc. ACL-89*.
- Ann Copestake, Alex Lascarides and Dan Flickinger. 2001. **An Algebra for Semantic Construction in Constraint-based Grammars**. In *Proc. ACL-01*.

Underspecified semantic representations

- Ann Copestake, Dan Flickinger, Carl Pollard and Ivan Sag. 2005. **Minimal Recursion Semantics: An Introduction**. *Research on Language and Computation*, 3:281–332.
- Alexander Koller, Joachim Niehren and Stefan Thater. 2003. **Bridging the Gap Between Underspecification Formalisms: Hole Semantics as Dominance Constraints**. In *Proc. EACL-03*.
- Jason Baldridge and Geert-Jan Kruijff. **Coupling CCG and Hybrid Logic Dependency Semantics**. In *Proc. ACL-02*.

Rethinking existential quantifiers

- Mark Steedman. 2007. **Surface-Compositional Scope-Alternation Without Existential Quantifiers**. Draft 5.2.

C. Additional Resources

Slides

- **Helsinki Slides**
- **Gothenburg Slides**
- **Malaga Slides (day 2, day 3, day 4, day 5)**

Code for Books

- **Book 1 Code**
- **Book 2 Code**

Prolog Help

- **Learn Prolog Now!**

Software Requirements

- **Overview**
- **SWI Prolog**
- **Otter (theorem prover) & Mace (model builder)**

IV. Grading

Letter grades will be assigned using the standard OSU scale based on class participation and homework assignments.

Class participation (25%):

- You will be expected to keep up with the readings and **actively participate** (ask questions, offer comments, listen, respond, and have all electronic equipment turned off during class lectures) in class discussions and activities.
- You will be required to lead a discussion over one of the assigned readings.
- Attendance will not be taken. However, your participation grade will be affected by attendance.
- Active Participation is worth 15 points.
- Leading a discussion is worth 10 points.

Homework assignments (75%):

- There will be six homework assignments each worth 15 points. The lowest score will be dropped in calculating the grade. Homework

assignments are generally due by the beginning of class, in the Carmen dropbox.

- Each homework assignment, except the one with the lowest score, is worth 15% of your grade.
- No late homework will be accepted **without prior notice** of a justifiable delay.
- I encourage group work on the homework assignments, but each of you must write out your own answers. Note that group work means that everyone in the group contributes and **fully understands** what you turn in.

Assignment	Points
HW1	15
HW2	15
HW3	15
HW4	15
HW5	15
HW6	15
Lowest HW dropped	(15)
Participation	15
Lead Discussion	10
Total	100 points

Grading Scale	
A+	97-100
A	94-96
A-	90-93
B+	87-89
B	84-86
B-	80-83
C+	77-79
C	74-76
C-	70-73
D+	67-69
D	65-66
E	0-64

Carmen

We'll be using the **Carmen** system for the schedule and for homework and reading assignments. There will also be discussion forums for posting questions and providing feedback (comments, complaints or ideas) during the course, anonymously if desired.

Students with Disabilities

Students who need an accommodation based on the impact of a disability should contact me to arrange an appointment as soon as possible to discuss the course format, to anticipate needs, and to explore potential accommodations. I rely on the Office of Disability Services for assistance in verifying the need for accommodations and developing accommodation strategies. Students who have not previously contacted the Office for Disability Services are encouraged to do so (292-3307; <http://www.ods.ohio-state.edu>).

Policy on Academic Misconduct

As with any class at this university, students are required to follow the Ohio State **Code of Student Conduct**. In particular, note that students are not allowed to, among other things, submit plagiarized (copied but unacknowledged) work for credit. If any violation occurs, I am required to report the violation to the Council on Academic Misconduct.

Disclaimer

This syllabus is subject to change. All important changes will be made in writing (email), with ample time for adjustment.