

# LINGUISTICS 807 – COMPUTATIONAL LINGUISTICS

## Course Syllabus

Department of Linguistics - Simon Fraser University – Spring Semester 2011

INSTRUCTOR: **DR. MAITE TABOADA**

**Class:** Tuesdays & Thursdays 2:30-4:20pm, AQ 3148B

**Office:** RCB 8206

**Office hours:** Tuesdays 11:30am -12:30pm (or by appointment)

**Phone:** 778-782-5585

**E-mail:** mtaboada@sfu.ca

**Course Web Page:** <http://www.sfu.ca/~mtaboada/ling807/ling807.html>

(Check frequently for new material and announcements)

### COURSE DESCRIPTION

This course is an introduction to theoretical and applied issues in computational linguistics. Computational Linguistics (or Natural Language Processing) refers to the processing of human languages through computers, which is mostly an applied venture. It also covers theoretical aspects, such as the computational modeling of language processing phenomena, and it overlaps with research in psychology and neurolinguistics.

In this course, we will survey the field, and study a few specific applications. No previous knowledge of programming is required (although it would be an asset). Classes will consist of lectures, drawing on material from the main textbooks, but also from other sources (to be distributed throughout the semester). In each class, there will also be a practical part, where we will learn some basics of programming, and will experiment with existing natural language processing systems.

### REQUIRED TEXT

- Jurafsky, D. and J. H. Martin (2008). *Speech and Language Processing (2nd edition)*, Prentice Hall ISBN-13: 978-0131873216. Related web page <http://www.cs.colorado.edu/~martin/slp.html>. (Please make sure to get the second edition).

### RECOMMENDED TEXTBOOK:

- Bird, S., E. Klein and E. Loper (2009) *Natural Language Processing with Python*, O'Reilly Media. Print ISBN: 978-0-596-51649-9. Ebook ISBN: 978-0-596-80339-1. Related web page: <http://www.nltk.org/book>

### COURSE EXPECTATIONS

1. Students are expected to attend all classes and to arrive on time so that classes may begin promptly. Announcements will be made at the beginning and end of classes regarding the assigned readings and the expectations for exams and assignments.
2. Students are expected to have read all assigned readings *before class*. Because many students will be learning about a new field of study in this class, some of the materials and concepts may seem fairly complex. In such cases, students should read assigned readings and go over the lecture notes multiple times.
3. Students will be responsible for all materials covered in the assigned readings and lectures.
4. Students will be respectful of other students and the instructor. In particular, students will not talk while the instructor or another student is talking.

5. Students should familiarize themselves with the Department's Standards on Class Management and Student Responsibilities at:  
<http://www.sfu.ca/linguistics/undergraduate/standards.html>

6. Academic dishonesty in all forms violates the basic principles of integrity and thus impedes learning. More specifically, academic dishonesty is a form of misconduct that is subject to disciplinary action and includes the following: cheating, fabrication, fraud, facilitating academic dishonesty, and plagiarism.

Tutors, editors, or any other types of outside help are not allowed. Exceptions are the assistance provided through the Student Learning Commons (see below, under Resources).

For more information on academic honesty and student conduct, please visit the following websites:

[http://students.sfu.ca/calendar/for\\_students/academic\\_honesty.html](http://students.sfu.ca/calendar/for_students/academic_honesty.html)

<http://www.sfu.ca/policies/teaching/index.htm>

If a student is found guilty of plagiarism or other form of academic dishonesty on a class paper, an assignment, or an exam, an academic dishonesty report will be written for that student. This report is filed in the department. The student receives a grade of zero for the paper, assignment, or exam. If more than one academic dishonesty report has been filed for a student, the case can be presented to the University Board on Student Discipline.

7. Please note that students requiring accommodations as a result of a disability must contact the Center for Students with Disabilities (778-782-3112 or [csdo@sfu.ca](mailto:csdo@sfu.ca)).

8. All student requests for accommodation for religious practices must be made in writing by the end of the first week of classes or no later than one week after a student adds a course.

#### **E-MAIL POLICY**

You are welcome to submit questions and comments via e-mail. Please keep the following in mind when sending your message.

1. I cannot always respond to messages late in the evening or on weekends. If you send a message late on Friday or during the weekend, I may not reply until the following week.

2. I can only respond to questions that can be answered in a sentence or two. Questions requiring longer replies should be asked in class or during office hours.

3. Please proof-read your e-mail message to make sure that your question is clear. In addition, I would appreciate questions that are expressed in an appropriately polite manner.

4. Please always sign your name and the course number. Make sure the Subject line contains the name of the course ("Ling 807"). Anonymous messages will not be answered. Further, if your message does not clearly address the content of the course, or the Subject line is simply "hi", there is a good chance that it will be automatically classified as spam, and discarded automatically.

5. Because of the large number of e-mail messages that I receive, it may be several days before I am able to reply to your message. It is often easier and faster to ask a question in class or during office hours. I may also provide answers in class, instead of replying to individual e-mail messages.

#### **COURSE GRADE**

The final grade will be calculated according to the percentages below. The final grade will take into account class attendance and participation (especially for students who are close to the next letter grade). More detail on the each of the grade components will be provided throughout the semester.

COMPONENT	WEIGHT
Assignments	40%
Presentation and class presentation	20%
Project	20%
Term paper	20%

Percentage scores on assignments and other course components will be based on objective criteria. Final letter course grades will be computed from percentage scores on all the course components. The following table provides a rough estimate of grade breakdowns for the final grade. Due attention will be given to the verbal descriptions listed below. There is no university-wide standard scale. An instructor adopts a grade scale appropriate to the level and content of the course.

96-100%	A+	Extraordinary performance	66-70%	C+	Satisfactory performance
91-95%	A	Excellent performance	61-65%	C	Marginal performance
86-90%	A-		56-60%	C-	
81-85%	B+	Good performance	50-55%	D	Unsatisfactory performance
76-80%	B		< 50%	F	
71-75%	B-				(fail)

### GRADE APPEALS

If a student wishes to contest the marking of an exam, assignment or paper, the instructor can agree to remark his/her entire exam at the instructor's convenience and not in front of the student. A grade reconsideration may raise the grade, lower the grade, or leave the grade unchanged, as stated in Policy T20.01, clause IV.2.

The only reason a grade change will be made is if there is an arithmetic error or if it has been determined that the exam, assignment or paper deserves a lower grade or a higher grade after it has been remarked.

The following are not reasons for reconsideration of a grade:

- The student is on probation.
- The student wants to get into Business or any other program.
- The student worked hard and thinks this should be a factor.
- The student does not like the grade scale.

- The student's score is x% below the next grade and would like the instructor to ignore the difference.

### RESOURCES

A number of resources are available to the students in the class.

The SFU Learning Commons is available to all SFU students, and provides assistance with learning, academic writing and reading strategies (<http://learningcommons.sfu.ca/>).

The course web page also lists a number of website and resources. Please check it frequently, and make sure you avail yourself of all the tools that you may need.

### TOPICS AND READINGS

The following list is subject to change, depending on students' interests. These are suggestions, and students are encouraged to consult other readings, especially when preparing for assignments, presentations and papers. Note also that readings may be added; you should always consult the web version of the syllabus and schedule.

Note: JM stands for "Jurafsky and Martin"; BKL for "Bird, Klein and Loper". Additional readings will be listed on the course web page.

Week	Date	Topic	Read (before class)
1	Jan. 6	Introduction	
2	Jan. 11	Introduction, cont.	JM ch. 1, BKL ch. 1 & 2, Jelinek 2005
	Jan. 13	Regular expressions	JM ch. 2, BKL ch. 3
3	Jan. 18 Jan. 20	Morphology	JM ch. 3, BKL ch. 4
4	Jan. 25 Jan. 27	Language models	JM ch. 4
5	Feb. 1 Feb. 3	Part-of-speech tagging	JM ch. 5, BKL ch. 5
6	Feb. 8 Feb. 10	Speech synthesis Speech recognition	JM ch. 8 JM ch. 9
7	Feb. 15 Feb. 17	<i>Reading week. No classes</i> <i>Reading week. No classes</i>	
8	Feb. 22 Feb. 24	Parsing	JM ch. 12, 13, BKL ch. 8, 9
9	Mar. 1 Mar. 3	Semantics	JM ch. 17, 18, BKL ch. 10
10	Mar. 8	Discourse	JM ch. 21

---

	Mar. 10		
11	Mar. 15 Mar. 17	Information extraction Sentiment analysis	JM ch. 22, BKL ch. 6, 7
12	Mar. 22 Mar. 24	Question answering and summarization	JM ch. 23, BKL ch. 11
13	Mar. 29 Mar. 31	Dialogue and conversational agents	JM ch. 24
14	Apr. 5 Apr. 7	Machine translation	JM ch. 25

---