

# Syllabus: Patterns in Language

New York University, Spring 2018

Up to date as of 2017-10-19

## Course

LING-UA 6.001

Patterns in Language

Mondays and Wednesdays, 11am–12:15pm

Room 104, Department of Linguistics, 10 Washington Place

## Course website

<https://www.nyu.edu/projects/champollion/patterns/>

## Instructor

Professor Lucas Champollion

Homepage: <https://www.nyu.edu/projects/champollion/>

[champollion@nyu.edu](mailto:champollion@nyu.edu)

Office hours: by appointment (room 404, 10 Washington Place)

## Recitation

LING-UA 6.002

Tuesdays, 3:30pm–4:45pm

Room 104, 10 Washington Place, 1st floor

## Required textbook

Language and Computers

Markus Dickinson, Chris Brew, Detmar Meurers

ISBN: 978-1-4051-8305-5

Available at the NYU Bookstore, and online (about \$35)

## Course description

If a computer is smart enough to beat humans at Jeopardy, does it follow that machines can think? Is it possible to predict the spread of the flu based on patterns in Google searches? Did Shakespeare really write that sonnet? Scientists use patterns in language to answer these questions, using the same concepts that underlie everyday applications like search engines, automatic translators, speech recognition, spell-checkers, and auto-correction tools. This course takes you on a tour of these applications, focusing on the technological and linguistic ideas behind them. You will gain practical hands-on experience and insight into how they work. No programming experience is required. The only background you need is curiosity about language and some everyday experience with computers.

## Prerequisites

None; this course assumes no prior knowledge of linguistics or computer science, and only high-school level math background. Don't worry if you are not a native speaker of English.

## Workload and grade calculation

- Homework assignments (30%)
- Midterm exam (30%)
- Final exam (30%)
- Recitation (10%)

**Your letter grade** for the class will be assigned on the following scale.

A	95–100%	B	83–86%	C	73–76%	D	63–66%
A–	90–94%	B–	80–82%	C–	70–72%	F	0–62%
B+	87–89%	C+	77–79%	D+	67–69%		

Fractional grades will be truncated down to the nearest integer (e.g. 94.7 is truncated to 94).

## Policies and other remarks

**Attendance policy.** We know that you are serious students but that you are also adults who budget time between coursework, jobs, personal/family commitments, and unforeseen circumstances. While we do not take attendance in class, as in any course, you will do best if you come to class every time and on time.

**What to do if you miss class.** Go to the NYU Classes site, <https://newclasses.nyu.edu>. All the materials will be posted to the course site. Review these and read the textbook chapter extra attentively. Its also a good idea to make a friend in the class so that you can trade notes in case one of you misses a lecture.

**Extra credit.** Midterm and final may or may not include some extra credit questions, worth up to an additional 5% of each test grade. Homework assignments may or may not occasionally have extra credit questions. There may or may not be an entire homework towards the end of the course that is more challenging than the others and that counts as extra credit in its entirety. Extra credit is an equal opportunity for everyone in the class to improve their grades, so it will not be issued to individual students upon request. If you want some grade security, we suggest doing all the homework assignments and not missing class.

**How to contact us.** The best way is by e-mail (see above for our e-mail addresses), or talk to us right before or right after class. Take advantage of office hours if you can. We will also be happy to meet you by appointment.

**Personal situations.** If anything arises during the semester that may affect your classroom performance, please come talk to the professor or your TA. If you wait until the end of the semester, we won't be able to help you. We're more likely to be able to address the situation if you speak to us when it happens. If something catastrophic happens in your life that prevents you from continuing your studies for an extended period of time, you should talk to the Dean of Students (currently Dean Kalb, [richard.kalb@nyu.edu](mailto:richard.kalb@nyu.edu)).

**Accommodations.** If you have a diagnosed disability that requires special accommodations, please bring your paperwork to class and talk to the professor and to your TA. For further information, see the Moses Center website at <https://www.nyu.edu/life/safety-health-wellness/students-with-disabilities.html>

**Religious holidays.** Whenever feasible, we will avoid scheduling exams and deadlines on religious holidays (please let us know if we have overlooked one). If you anticipate being absent because of any religious observance, you should tell us in advance whenever possible. If you are unable to attend class because of your documented religious beliefs, you will not be penalized for any class, recitation, exam, or assignment deadline missed

on that day or days, and you will be given a make-up exam or an assignment deadline extension.

**Academic Honesty Policy.** Cheating will not be tolerated and may cost you your grade and have repercussions in your career (for example, having a cheating record will all but negate your chances of getting into a decent law school). **You must solve all homework assignments alone and without help from other students.** If you use any resource other than the textbook and lecture slides as you prepare your homework assignment, you must provide a scholarly citation for the resource and explain the extent to which you have used it. The following is a non-exhaustive list of examples of what counts as cheating in this course: (i) copying a homework or exam from another student, with or without the student's knowledge; (ii) collaborating on the homework with another student; (iii) plagiarism, that is: reproducing data or ideas from a scholarly source, website, or other resource (other than the textbook and lecture slides) without attributing authorship where it is due; (iv) including solutions obtained from answer keys or similar sources into one's homework submission. Please read the University policies on Academic Integrity, which are described on <https://cas.nyu.edu/page/academicintegrity> for CAS and on <https://tinyurl.com/nyu-policy> for NYU (also via <https://www.nyu.edu> > About NYU > Policies and Guidelines > University Policies and Guidelines > Academic Affairs & Faculty > Academic Integrity for Students at NYU).

You will fail any homework on which you have cheated, even if you have only cheated on a part of it. You will fail the course if you cheat repeatedly or if you cheat on a test. If we have reasonable grounds to suspect a case of plagiarism or cheating, we reserve the right to refer the case directly (i.e., without first talking it over with the students) to the Dean of Students. This is because the dean is in a better position than ourselves to distinguish first-time from repeat offenders and to apply fair and consistent standards across NYU.

**How to succeed in this course.** This course requires a certain degree of involvement on your part if you wish to earn more than a passing grade. If you want to do well, you should:

- come to all the classes and take notes (you can download or print out the slides before class);
- check your email often for announcements;
- take full advantage of recitations and office hours — the TA is there to answer your questions;
- do all the reading before the day for which it is assigned;
- set aside at least two or three hours each week to do the homework, and don't wait to do it at the last minute;
- not be afraid to ask your TA/professor for help if you have trouble with an assignment.

# Schedule

Wk	Date	Topics	Notes
1	Jan 22 Jan 24	Organization, Introduction Ch 1 (w/o speech recognition)	
2	Jan 29 Jan 31	Ch 1 (w/o speech recognition) Ch 2: Writers' Aids	Feb 4: add/drop period ends
3	Feb 5 Feb 7	Ch 2: Writers' Aids Ch 3: Tutoring Systems	
4	Feb 12 Feb 14	Ch 3: Tutoring Systems Ch 3: Searching (+IR)	
5	Feb 19 Feb 21	(no class: President's Day) Ch 4: Searching (+IR)	
6	Feb 26 Feb 28	Ch 4: Searching (+IR) Ch 4: Searching (+IR)	
7	Mar 5 Mar 7	midterm review midterm	
8	Mar 12 Mar 14	(no class: Spring break) (no class: Spring break)	
9	Mar 19 Mar 21	Ch 5: Classifying docs / ML Ch 5: Classifying docs / ML	
10	Mar 26 Mar 28	Ch 5: Classifying docs / ML Ch 5: Classifying docs / ML	
11	Apr 2 Apr 4	Ch 6: Dialog Systems (+AI) Ch 6: Dialog Systems (+AI)	
12	Apr 9 Apr 11	Ch 6: Dialog Systems (+AI) Ch 7: Machine Translation	
13	Apr 16 Apr 18	Ch 7: Machine Translation Ch 7: Machine Translation	
14	Apr 23 Apr 25	Speech recognition Speech recognition	
15	Apr 30 May 2	Speech recognition Ch 8: Impact of LT	
	May 7	Final review	last class
16	<b>May XX</b>	<b>final exam</b>	