Computational Linguistics 1
Fall 2019
Syllabus

Course number:	LIN 537
Meeting times:	MW 2:30-3:50 pm
Coding practice:	M 11:00am - 12:00 pm
Class location:	CompLab (N250)

Instructors:	Alëna Aksënova
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Office hours:	M 12:00-1:00 pm; W 4:00-5:00 pm
Office number:	SBS N210

1 Course info

1.1 Bulletin description

The main objective of this class is to introduce software development so that students can script, implement algorithms and perform data analysis on their own. The language we will focus on is Python, and, by the end of the class, the expected knowledge will allow them to implement tree traversals, parsers, and part-of-speech taggers, among others.

1.2 Teaching objectives

This class can be considered an introduction to Python programming and algorithms that are necessary for a linguist to have a solid computational foundation.

Practice We will start by introducing students to the basics of programming such as variables, flow control and for/while loops. We will discuss different data structures, such as lists, dictionaries, sets, and others. Then we will cover functions and classes to define more abstract concepts. Finally, we will implement several well-known algorithms that will help strengthen coding skills.

Theory Apart from the coding foundations, we will discuss the intuitions and implementations behind different parsing (e.g. CYK parser) and part-of-speech tagging (e.g. Viterbi) algorithms. We will implement simple N-gram models, finite state machines, and trees that are crucial for linguistics and formal language theory. Finally, we will discuss the tasks NLP and computational linguistics are solving these days.

1.3 Prerequisites

Knowledge	There is no prior coding knowledge required for this class.
Technology	Students must bring a laptop to class every day.

2 Topics covered

Notebook 0	Syllabus and general info
Notebook 1	Basic IO, variables, conditions
Notebook 2	Flow control, indexing
Notebook 3	Lists, for loops, range, break, continue
Notebook 4	Functions, arguments, file IO
Notebook 5	While loops, dictionaries
Notebook 6	N-gram models
Notebook 7	(Practice)
Notebook 8	Classes, attributes, and methods
Notebook 9	Finite state devices
Notebook 10	Parsing and POS tagging
Notebook 11	Trees and tree traversals
Notebook 12	TBD
Notebook 13	(Practice)
Notebook 14	Ongoing challenges, Q&A, final project discussion

3 Grading

If the class is taken for 3 credits:

- submission of the final project;
- submission of all assignments;
- class attendance and participation.

If the class is taken for 2 credits (option might not be available):

- submission of all the assignments;
- very frequent class attendance and participation.

If the class is taken for 1 credit (option might not be available):

- submission of half of the assignments;
- frequent class attendance.

If the class is taken for 0 credit:

- frequent class attendance.

Please note, that the late submissions will not be graded.

4 Policies

4.1 Disability Support Services

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Disability Support Services, ECC (Educational Communications Center)

Building, Room 128, (631) 632-6748. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential. Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services. For procedures and information go to here.

4.2 Academic Integrity

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty are required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website.

4.3 Critical Incident Management

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures.