

Syllabus

INLS 512, Applications of Natural Language Processing, Spring 2022

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NOTE: Information given in this syllabus is subject to change, based on the COVID situation. I will try to give you plenty of notice of any changes. I will be flexible about assignments, due dates, and such this semester, and I appreciate your flexibility as well!

Syllabus Contents

- Course Description
- Rationale and Approach
- Keys to Success
- Learning Objectives
- Course Policies
- Policies on Academic Integrity and Diversity
- Grading Policies
- Grade Components
- Communications
- Sakai

See the Course Schedule Overview for additional information on topics and assignments. See the Assignment Overview for additional information on assignments.

Course Description

INLS 512, Applications of Natural Language Processing

Explores current and future uses of natural language technologies. Topics vary, and may include translation, generation, deception, health informatics, ethics and evaluation, and student-selected areas of interest.

This course is open to undergraduate and graduate students who have an interest in the intersection between computers and human language -- how computers can do useful things with language. Students do not need extensive programming skills; a sense of exploration however, is vital.

Rationale and Approach

This course is a survey of applications and their underlying techniques. It is intended for a wide variety of students: experience in linguistics or programming is not required. You and your classmates will have a range of skills and expertise, and the course will provide opportunities to learn from, and help, each other.

Your work for this class falls into 4 categories: 1) preparation for class, 2) in-class activities and discussions, 3) homework assignments, and 4) quizzes.

Preparation: The schedule lists the topics and readings for each class meeting. Folders in the Sakai Resources/Class Materials contain materials for each class. Slides (when used) for each class will usually be added prior to the class meeting, in case you would like to take notes on them.

Readings are taken from research literature, textbooks and collections, and manuals and handbooks.

You are welcome to work together to prepare for class.

In-class activities: In-class activities are a mix of lecture, discussion, student presentations, and exercises.

Homework: Homework assignments include exercises, preparation of a "Need To Know" presentation, a 2-part literature review, and reflections on each unit.

Quizzes: Most Units will conclude with a brief quiz that covers important concepts from the topic. Quizzes will be assigned as homework.

Keys to Success

- Plan ahead! Success in this course requires project management skills: identify milestones and deadlines, and plan your work accordingly.
- Coordinate the work schedule for this class with the schedules for your other classes, work, and other activities. You are likely to have many deadlines toward the end of the semester, so it's important for you to keep up.
- Give yourself plenty of time to prepare for each class. You may find some of the readings challenging; take the time to get as much as you can from each one. If you are not prepared for class, you will not be able to fully participate in (and benefit from) each class meeting.
- If you have any questions or concerns about the class or your work for the class, please talk to me about them. I cannot help you if I don't know there is an issue, and it is always easier to deal with problems earlier rather than later.

The most important key of all is to take advantage of this course to look at the world in a different way.

- **Enjoy and appreciate human natural language.** Pay attention to language and its context: what people say or write, the vocabulary and technologies they use, what they seek to accomplish with their language. Think about the challenges natural language poses for computational systems.
- **Think about the respective strengths and limitations of people and computers regarding language.** What do people do well? What do current NLP systems do well? How can we design systems that take advantage of their respective strengths, and/or compensate for their respective limitations? What new opportunities do you see for future applications of NLP?
- **Play!** There are many NLP tools and toys available online. Many research projects have websites with examples or demonstrations. Try them with different kinds of language and see what happens.

Learning Objectives

1. Students will learn about characteristics of language and its use, and understand their implications for Natural Language Processing and Natural Language Processing applications.
2. Students will survey a selection of NLP applications, and be able to describe the problems or task addressed, the materials and methods used, how the applications are evaluated, and opportunities for future developments for each application.
3. Students will learn about some basic NLP tools and techniques.
4. Students will identify and investigate a topic of individual interest in some depth by writing a literature review.

Course Policies

Preparation and Attendance.

One of my goals is to always be prepared for class, and to start the classes (Zoom or in person) on time. If unforeseeable circumstances prevent this for any reason, I will try to notify you beforehand if at all possible. I expect the same of you: be prepared for class, and be ready to start class on time.

Another of my goals is to help each of you succeed in this course!

This is an unusual semester. We all need to be somewhat flexible about meetings, preparations, and requirements, while maintaining opportunities for learning about NLP. Your health and well-being, and those of your family and friends, are important!!! Please take care of yourselves. I recommend sleep, outdoor time, and playtime, as well as work time! I have also included a list of resources in this Syllabus. If you are not feeling like yourself – are sad, depressed, angry...PLEASE take advantage of the services offered by the University!

I hope you can attend all class meetings.

- If you know you will miss a class because of illness or an unavoidable conflict, please inform me by email in advance of the class.
- If you are feeling unwell, please do not attend in-person classes. We can make other arrangements so you can keep up (Zoom, “note-sharing buddies”, etc.)
- If you must miss a class session unexpectedly, for example, because of illness or technical problems or other issue, please inform me by email as soon as possible.
- If you miss a class for any reason, we will work together so you can catch up.
- If you do get sick, whether with COVID or something else, your care and recovery is your first priority. When you have recovered, we can work out a plan for catching up on the course work. In other words, I do NOT expect you to work if you are unwell.

Reading assignments, exercises, study questions, and other preparation should be done before the class for which they are assigned so you can ask questions and participate in discussions. Some of the readings are introductory or textbook-like, others are research articles, which may be more complex. Give each reading your honest effort, but don't panic if there's something you don't understand. Make a note of your questions so we can discuss them in class.

If there is something you don't understand, say so! If you don't want to ask during class, ask me via email, or we can schedule a Zoom or in-person appointment.

Zoom “Customs”

All class meetings will be held via Zoom at least until January 30. I hope we can meet in person for our January 31 class, but that may change.

We have probably all had different experiences with Zoom classes. I have a few observations and comments about our Zoom class meetings, but I also welcome your suggestions. It is likely our Zoom customs will evolve during the semester.

- I will not record the first Zoom class meeting. During our first meeting, we will discuss whether recording and posting the videos in Sakai for those who missed the meeting, or want to review the class is desirable.

- I will have my camera on. It is your choice whether to use your camera for all, some, part, or none of the class.
- We will use breakout rooms for some small group discussions and exercises. All members of a group should be active participants. Sometimes your group will need to select a speaker to report on your discussion to the class. You can help ensure that every one has opportunities to be the speaker. For example, you could ask if someone has not yet been speaker.
- We can also use the Chat feature to ask questions and contribute to the discussion. As you probably know, it can be difficult to lead a meeting and monitor chat as well. Feel free to call my attention to the Chat if I'm missing something.

Textbook

There is no textbook for this class. Readings and other materials come from a variety of journals, conference proceedings, and websites. A list of additional resources, including textbooks and tools, is available in the NLP Resources Course Document.

Assignments

Assignments should be submitted through the Assignment tool in Sakai.

Each assignment has a due date. With some exceptions (such as presentations), you can submit late assignments up to 4 days after the due date, through the Sakai assignment. I will not take off points for a late assignment. After that 4-day period, you can submit an assignment as an attachment in an email to me, or by putting it in your Sakai Dropbox. If you must submit your assignment late, please send me an email by the original due date to let me know.

However:

- Often we will share the results of your Exercises during class on the due date. If you haven't completed the exercise, your contributions to the discussion will be limited.
- If you do submit an assignment after the due date, I may not be able to give you timely feedback on your work. That could delay your work on subsequent assignments. This applies particularly to the Literature Review.

Pay attention to the due dates! It is your responsibility to plan your time so you can complete each deliverable on time. Do not wait until the last minute (or hour or day) to ask questions about the assignment – I may not be available for consultation.

Be sure you have completed each part of the assignment, and proofread it before you submit it.

Requests for Extensions

Life is full of unexpected events – some good, some not so good. If you have a real problem submitting a deliverable on time, please contact me – we can work out a plan. (Just getting a late start on an assignment does not count as a real problem.) If possible, your request for an extension should be made, preferably by email, at least 24 hours prior to the due date. If an emergency arises that prevents you from contacting me in advance, please do so as soon as possible.

Remember: I want everyone to succeed in this course!

Policies

Academic Integrity

Chapel Hill has had a student-administered honor system and judicial system for over 100 years. Because academic honesty and the development and nurturing of trust and trustworthiness are important to all of us as individuals, and are encouraged and promoted by the honor system, this is a most significant University tradition. More information is available at <http://studentconduct.unc.edu/honor-system>

The UNC Honor Code is in effect for all work in this course. Chapter 5 of the "[Instrument of Student Judicial Governance](https://studentconduct.unc.edu/sites/studentconduct.unc.edu/files/documents/Instrument.pdf)" (<https://studentconduct.unc.edu/sites/studentconduct.unc.edu/files/documents/Instrument.pdf>) discusses Academic Dishonesty; **you are responsible** for being familiar with, and abiding by all aspects of the "Instrument".

Students often ask what is okay to talk about with other students and what is not. There are some specific guidelines for this course.

- I do encourage you to help each other learn the course material – your fellow students can often be a great resource for learning. For example, you may want to work together when you are reading an assigned reading for class, or discuss your thoughts in response to a question posed in the reading notes.
- I also encourage you to collaborate on in-class discussions and exercises.
- All work you submit should be your own. Provide full citations for any material (quotations, diagrams, etc.) you use from other sources.
- Individual homework assignments are to be done **individually**. You may consult the course readings, your notes, and even other print or web sources. (Keep in mind, however, that what you find in other sources may not be consistent with what I want you to do.) You may not consult your classmates or other people; all questions should be addressed to me.
- Tasks for collaborative homework assignments) should be apportioned equitably. Each member of the group is responsible for contributing to the assignment.
- You must sign (check) the honor statement when you submit each assignment. This confirms that you and the work you submit conform to the Honor Code.

Diversity

In support of the University's diversity goals and the mission of the School of Information and Library Science, SILS embraces diversity as an ethical and societal value. We broadly define diversity to include race, gender, national origin, ethnicity, religion, social class, age, sexual orientation and physical and learning ability. As an academic community committed to preparing our graduates to be leaders in an increasingly multicultural and global society we strive to:

- Ensure inclusive leadership, policies, and practices;
- Integrate diversity into the curriculum and research;
- Foster a mutually respectful intellectual environment in which diverse opinions are valued;
- Recruit traditionally underrepresented groups of students, faculty and staff; and
- Participate in outreach to underserved groups in the State.

The statement represents a commitment of resources to the development and maintenance of an academic environment that is open, representative, reflective and committed to the concepts of equity and fairness.

Accessibility Resources and Service (ARS)

The University of North Carolina at Chapel Hill facilitates the implementation of reasonable accommodations, including resources and services, for students with disabilities, chronic medical conditions, a temporary disability or pregnancy complications resulting in barriers to fully accessing University courses, programs and activities.

Accommodations are determined through the Office of Accessibility Resources and Service (ARS) for individuals with documented qualifying disabilities in accordance with applicable state and federal laws. See the ARS Website for contact information: <https://ars.unc.edu> or email ars@unc.edu.

Counseling and Psychological Services (CAPS)

CAPS is strongly committed to addressing the mental health needs of a diverse student body through timely access to consultation and connection to clinically appropriate services, whether for short or long-term needs. Go to their website: <https://caps.unc.edu/> or visit their facilities on the third floor of the Campus Health Services building for a walk-in evaluation to learn more. (source: *Student Safety and Wellness Proposal for EPC, Sep 2018*)

Title IX Resources

Any student who is impacted by discrimination, harassment, interpersonal (relationship) violence, sexual violence, sexual exploitation, or stalking is encouraged to seek resources on campus or in the community. Please contact the Director of Title IX Compliance (Adrienne Allison – Adrienne.allison@unc.edu), Report and Response Coordinators in the Equal Opportunity and Compliance Office (reportandresponse@unc.edu), Counseling and Psychological Services (confidential), or the Gender Violence Services Coordinators (gvsc@unc.edu; confidential) to discuss your specific needs. Additional resources are available at safe.unc.edu.

Grading Policies

Your final grade will be based on the following:

I Need to Know About	10%
Literature Review Part 1	20%
Literature Review Part 2	20%
Exercises and R&Ds	10%
Quizzes	20%
Final Exam	20%

See the Assignment Overview for additional information on course assignments; details for each will be distributed as they are assigned.

The following grade scale will be used AS A GUIDELINE (subject to any curve) for **undergraduate** students:

Grade Range	Definition*
A 90-100%	Mastery of course content at the <u>highest level of attainment</u> that can reasonably be expected of students at a given stage of development. The A grade states clearly that the students have shown such <u>outstanding promise</u> in the aspect of the discipline under study that he/she may be strongly encouraged to continue.
B 80-89.9%	<u>Strong performance</u> demonstrating a high level of attainment for a student at a given stage of development. The B grade states that the student has shown solid promise in the aspect of the discipline under study.
C 70-79.9%	A <u>totally acceptable</u> performance demonstrating an adequate level of attainment for a student at a given stage of development. The C grade states that, while not yet showing unusual promise, the student may continue to study in the discipline with reasonable hope of intellectual development.
D 60-69.9%	A <u>marginal performance</u> in the required exercises demonstrating a minimal passing level of attainment. A student has given no evidence of prospective growth in the discipline; an accumulation of D grades should be taken to mean that the student would be well advised not to continue in the academic field.
F 0-59.9%	For whatever reason, an <u>unacceptable performance</u> . The F grade indicates that the student's performance in the required exercises has revealed almost no understanding of the course content. A grade of F should warrant an advisor's questioning whether the student may suitably register for further study in the discipline before remedial work is undertaken.

*Definitions are from: <http://registrar.unc.edu/academic-services/grades/explanation-of-grading-system/> (underlining is my emphasis)

Plus and minus scores, when given, use the following range:

A	93 and higher
A-	90-92
B+	88-89
B	83-87
B-	80-82
C+	78-79
C	73-77
C-	70-72
D+	68-69
D	63-67
D-	60-62
F	59 and below

The following grade scale will be used AS A GUIDELINE (subject to any curve) for **graduate** students:

Grade Range	Definition*
P 80-100%	Pass
F 0-79.9%	Fail

*Definitions are from: <http://registrar.unc.edu/academic-services/grades/explanation-of-grading-system/>

Communications

The best way to get in contact with me is by email: shaas at email dot unc dot edu. Note that I receive a large amount of email and while I try to reply to student emails within 48 hours, there are times that it may take me 3-4 days to reply. Therefore, it is important that you get started on assignments early, so there is time for me to respond to any questions you may have. I cannot guarantee that I will be able to answer last-minute questions (e.g., within 2 days of the assignment due date).

If you want to discuss something we talked about in class, an assignment or some other matter, please send me an email so we can set up a meeting, either by Zoom or (eventually) in my office. My office is room 215, Manning Hall.

I will use the message/email facility within Sakai to send announcements to the class, as well as to individual students.

Sakai

We will use Sakai for almost all course activities. All enrolled students should have access to the UNC Sakai site for this course: <http://sakai.unc.edu/>

Resources

The Course Documents folder contains the syllabus, schedule overview, assignment overview, and other such documents.

There is a folder for each Unit of the course, containing readings, assignments, and other materials for each class meeting in the Unit. It is your responsibility to allow plenty of time to review the folder so you can prepare for each class.

The Need To Know folder contains the NTK schedule, and will also contain each presentation.

Submitting assignments

In order for you to receive credit for an assignment, it must be submitted following the submission instructions given in the assignment specifications. Most assignments will be submitted through the Sakai Assignment tool.

If for some reason you are unable to submit an assignment to Sakai, as a last resort you may email it to me along with a note about the problem you encountered. Then, as soon as you are able to, it is your responsibility to submit the exact same assignment to Sakai. The email serves as a record that you tried to submit the assignment on time, but to receive credit, your assignment must be uploaded to Sakai.

I will use the Sakai Gradebook to record your course grades.

Dropbox

You each have a drop box in Sakai that is accessible only to you and me. You may store work in progress here. If you have a question about an assignment, and it would be helpful for me to see your work, you may store the draft in your drop box, and refer to it in your emailed question. I will look at only that file to respond to your question. Do NOT submit homework by putting it into your drop box.