

XCS224N Natural Language Processing with Deep Learning

Syllabus and Course Information

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Email xcs224n-staff@stanford.edu for course-related questions.

Get in touch with your [course facilitator](#) for content-related questions.

Welcome

Welcome to XCS224N: Natural Language Processing with Deep Learning! This professional course is based on graduate-level material from Stanford's on-campus course CS224N, adapted for a professional certificate format. In this course, you will explore the fundamental concepts of NLP and its role in current and emerging technologies. You will gain a thorough understanding of modern neural network algorithms for the processing of linguistic information. By mastering cutting-edge approaches, you will gain the skills to move from word representation and syntactic processing to designing and implementing complex deep learning models for question answering, machine translation, and other language understanding tasks.

- ➔ Learn from Stanford graduate lecture videos that have been edited for easier navigation, reference, and review.
- ➔ Complete guided homework assignments implementing content covered in the course lectures.
- ➔ Receive support from Stanford-affiliated Course Facilitators.
- ➔ Connect to a cohort of peers from diverse locations and professional backgrounds.

Important Dates

March 10, afternoon Pacific	Slack and GitHub invites sent (must be accepted within 7 days)
March 13, noon Pacific	All lecture videos are available.
March 13, evening Pacific	Course Facilitator connection emails sent out to learners
March 31	Drop/Transfer Deadline

See the calendar for [assignment release dates and deadlines](#)

Course Platforms and Tools

Learning Management System	Access course videos, find and submit assignments
Azure Lab	to provide cloud computing resources for Assignments 4 and 5.
GitHub	Find assignment codes and files
Slack	Ask questions and engage in class discussions, find updates (Sent also via email)

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Calendar, Deadlines, and Pacing

The course runs from **March 13 – May 21, 2023**. This is a *suggested* pacing guide, but you are free to view the videos at any pace you'd like. Please, take note of the assignment release dates and deadlines (all **11:59 PM Pacific**).

Weeks	Suggested Pacing	Assignments		
		Released	Regular Deadline	Late Deadline*
1 & 2	Word Vectors Neural Network Learning	A1 & A2 March 13 A3 March 24		
3 & 4	Dependency Parsing Knowledge RNNs and Language Models Neural Machine Translation and Attention Research in NLP	A4 March 31	A1 March 26	*A1 March 31
5 & 6	Transformers and Pretraining Coreference Resolution Integrating Knowledge in Language Models	A5 April 14	A2 April 2 A3 April 16	*A2 April 7 *A3 April 21
7 & 8	Model Analysis and Explanation Improving NLP Models		A4 April 30	*A4 May 5
9 & 10	Guest Lectures (Optional)		A4 May 21	*A4 May 26

Late Problem Sets and One-time Penalty Waiver

All assignments submissions can be turned in **up to five days late and are assessed a penalty of -1 point per late day**. After five days, the submission link will close, and entries will no longer be accepted.

➔ There is a way how to remove the late penalty points – each student is allowed to use one **late penalty waivers: one for any of the assignments**.

To use your penalty waiver, contact your Course Facilitator or xcs224n-staff@stanford.edu. Please note that all penalty waiver requests will be applied at the end of the course.

Assignments and Grading

Assignments will be made available via the SCPD course platform on the dates noted above in the course calendar.

Here is a [short description of each assignment](#).

Optional Supplementary Texts:

We are often asked for text recommendations. There are no required texts for this course, however, if you are interested, you may find these useful:

- Dan Jurafsky and James H. Martin. Speech and Language Processing (3rd ed. draft)
- Jacob Eisenstein. Natural Language Processing
- Yoav Goldberg. A Primer on Neural Network Models for Natural Language Processing
- Ian Goodfellow, Yoshua Bengio, and Aaron Courville. Deep Learning

Note: In the adaption from the CS224N graduate course to the XCS224N professional course, the final project has been removed. If completing a project-based course is your top priority, we recommend considering the CS224N graduate course or the [XCS224U professional course](#).

Certificate Requirements

To successfully complete the course, you will need to complete the required assignments and receive a score of 70% or higher for the course. The course is pass/fail, letter grades are not granted. If you pass the course, you will receive a digital certificate after the course ends.

Deliverables	Points
A1 (Extra Credit)	24 (5)
A2 (Extra Credit)	29 (5)
A3	34
A4	49
A5 (Extra Credit)	64 (10)
Assignments Total	200
Extra Credit Total	(20)
Minimum Passing Total	140 (70 %)

Accessing Course

- ➔ On **March 13 after 12 pm Pacific Time**, log in to your [mystanfordconnection](#) account.
- ➔ “XCS224N: Natural Language Processing with Deep Learning” will be visible as a live course. Click the link titled “Course Videos and Assignments” to enter the learning management system.
- ➔ [Here is a video on how to navigate the course portal.](#)

Joining Slack

An invitation to Slack will be sent to your email address on file on **March 10**.

- ➔ **If you have NOT received the email invitation** / you have taken another course with us, please **proceed directly to** <http://XCS224N-scpd.slack.com/> ➔ I have a guest account ➔ Log in using your credentials.

Joining GitHub

Course assignments will be posted in a private GitHub repository. You will receive an email invitation to a GitHub team called “XCS224N-spring-2023” at your address on file with SCPD. If you’d prefer to receive a GitHub invitation at a different address, just let us know at xcs224n-staff@stanford.edu

Course Facilitators and Support

If you have questions about the class content or assignments, we recommend posting your question publicly on Slack (you will likely receive a faster response from one of the course facilitators or classmates). Before you post, be aware of important [course policies](#).

Beyond Slack, **you will be connected to a Course Facilitator (CF) on the first day of the course.**

Course Facilitators lead a smaller group of learners, so they can provide you with more individualized course support, and they serve as your primary point of contact. Your Course Facilitator will send you important reminders and be in touch with their availability for questions and potential online office hours and 1-1s.

Note on Code Assignments and Debugging

While the course team is here to help and support your experience, it is ultimately your responsibility to write, test, and debug your own coding assignments. CFs may view and provide guidance on your work; however, they will not send you exact answers on what to insert into your assignments. Additionally, before reaching out to a CF or Slack for help, it's expected that you have taken the reasonable step of performing an analysis yourself. This policy is meant to ensure that you leave the course having mastered the material and enable CFs to focus attention on questions where their guidance is most impactful.

Drop/Transfer Policy

We don't want to see you go, but if you decide this is not the right course or time, you have two options: either **drop** the course OR **transfer** to the next iteration of XCS224N or another course in the [AI Professional Program](#). To request a drop or transfer, email xcs224n-staff@stanford.edu (please, specify what you'd like to do).

Up until March 13, 2023, No cost for drop/transfer. If you drop, you will get a full refund.

Up until March 31, 2023, Once the course has begun, there will be a drop/transfer fee of \$200, i.e.: If you request a drop, you will be reimbursed 100% of your tuition minus \$200. If you request a transfer, there will be a \$200 fee in a form of an invoice.

Important Note: Beyond the third week of the course, tuition refunds are not granted.

Important Policies

Honor Code

Students will be asked to review and maintain the standards set forth by the [Stanford Honor Code](#) when completing quizzes and assignments in this course. You can review the section labeled Violations of the Honor Code for representative examples relevant to this course.

Students are strongly encouraged to form study groups, discuss, and work on homework problems in groups and help each other; However, each student must write down the solutions independently and cannot refer to written notes from the joint session. **In other words, you must understand the solution well enough in order to reconstruct it independently.** Further, because we occasionally reuse assignment questions from previous years, you are expected not to copy, refer to, or look at the solutions in preparing your answers. It is an honor code violation to intentionally refer to a previous year's solutions

After completing this course, you are welcome to share your experience and credential with others; however, **it is considered a violation of the honor code to share assignment solutions including on public platforms such as GitHub.** Faculty in the computer science department have strongly encouraged us to refrain from posting solutions for assignments, thus we ask that you **DO NOT** share the exact code.

Note on Networking

One of the benefits of this course is to be able to network with other course participants and create study groups. We encourage this kind of interaction and want to make sure that it is a positive experience. It is imperative that no course participant is made to feel uncomfortable or their ability to learn or otherwise benefit from the course is impeded by the actions of another participant. Please use good judgment. Keep interactions professional and focused on coursework or career networking. Avoid using offensive language and respect your colleagues' preferences regarding direct messaging. Please respect and uphold the rights and dignity of others regardless of race, color, national or ethnic origin, sex, age, disability, religion, sexual orientation, gender identity, or socio-economic status. Our team is always available either here in Slack or via email, so please feel free to reach out to us if you have any questions or concerns, or if any situation arises.

You can review SCPD's [terms of service](#) here, including rules for online conduct.