

SYDE 556/750
Simulating Neurobiological Systems
Lecture 0: Administrative Remarks

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Based on lecture notes by
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Sept 4, 2024



Course website:

<http://compneuro.uwaterloo.ca/courses/syde-750.html>

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1 Organization

- **Course website**

Links to all course material, including slides and these lecture notes and slides can be found at the following URLs:

- <http://compneuro.uwaterloo.ca/courses/syde-750.html>
- <https://github.com/celiasmith/syde556-f24>

Note: Any material on GitHub should be considered “preliminary” until officially linked at from the course website. Until then, the material is still subject to change.

- **Instructor**

Chris Eliasmith

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- **Readings**

- Main resource: “Neural Engineering”, Chris Eliasmith and Charles Anderson, 2003 [1]
- Optional: “How to Build a Brain”, Chris Eliasmith, 2012 [2]

2 Coursework

- **Five assignments**

- The assignments are worth 20%, 20%, 15%, 15%, 30% of the final mark, respectively. (For SYDE 750 students, the final project is worth 20% of the final mark and these are scaled to 80%.)
- You have about two weeks for each assignment.
- You are free to discuss the assignments with other students, but do not take any (written) notes during such discussions. Everyone must write their own code, generate their own graphs, and write their own answers.
- These assignments (particularly the first two) are a lot of work, so start early.

- **Final project** (worth 30% of the final mark for 556 and 20% for 750)

- Optional for 556 students.
- Build a model of some neural system.
- This must be more of a research project with more novelty.
- Potential ideas are collected here.
- In any case, your project idea needs to be approved via email before the date provided in the syllabus.
- See the project page for more information.

- **Class Participation in the Discussion** (SYDE 750 only)

- SYDE 750 students must attend the weekly discussion.
- Each student is asked to submit (at least) three questions or interesting observations pertaining this week's reading, lecture notes, or the material referenced in the lecture (this should be about 100 words).
- Questions must be submitted via email to the instructor by midnight (23:59 EST) on the day before the seminar.
- This is to ensure a lively discussion in the seminar.

3 Things you should do to get started

- Get the textbook (“Neural Engineering”, Chris Eliasmith and Charles Anderson, 2003)
- Be able to run `jupyter lab` or `jupyter notebook` with a Python 3 kernel. Install `numpy`, `scipy`, and `matplotlib`. Anaconda is a Python distribution that ships with these packets preinstalled, so (depending on your platform) this might be the easiest to use.
- Start thinking about a project. . . already.

References

- [1] Chris Eliasmith and Charles H. Anderson. *Neural Engineering: Computation, Representation, and Dynamics in Neurobiological Systems*. Cambridge, Massachusetts: MIT Press, 2003. 380 pp. ISBN: 978-0-262-55060-4.
- [2] Chris Eliasmith. *How to Build a Brain: A Neural Architecture for Biological Cognition*. Oxford Series on Cognitive Models and Architectures. New York, New York: Oxford University Press, 2013. 456 pp. ISBN: 978-0-19-026212-9.