

1492 Final Project Information

In the final project, you can either (a) use simulations to examine some phenomenon of interest to you (e.g., based on your own research if you are involved in a lab); or (b) select from one of the project ideas we suggest. In either case you could build a network 'from scratch' or explore manipulations / additions within an existing network from one of those available in the course explorations (including any of those you have not yet explored). *Do not be overly ambitious* — relatively clear and simple but thoughtful work is preferred to a complicated half-baked mess. Do not be misled by the relative simplicity of running the canned exercises in the book — *simulation projects take a long time to complete!*

Undergraduate students are encouraged to work in groups of 2, but each of you will have to contribute independently and each of you will have to write up separate components of the final paper. The following timeline is designed to ensure that you make progress on your project and that you receive feedback on it before turning in the final version.

Deadline	Assignment
Oct 31	Project topic
Nov 5	Project proposal (1 page summary of your question of interest and proposed approach to explore this question through simulations)
Nov 11 -15	Meeting w/ TA and instructor about project
Dec 3-5	Presentation of project to class
Dec 13	Final paper

INSTRUCTIONS FOR THE FINAL PROJECT PROPOSAL

The proposal should be roughly one page. If you are unsure about which topic to pursue, you can select from one of the options we suggest in the other attached document and/or read over the “general advice on choosing topics” section (below). Also, if you come up with more than one idea for your project proposal, and you aren't sure which one sounds best, feel free to suggest multiple ideas. The benefit of suggesting multiple ideas (as opposed to suggesting one, and waiting to hear back from us) is that it will help us agree on a topic more quickly. The sooner you get an approved topic, the more time you will have to work on your project....

You should be as specific as you can about what you want to do with the model (what hypothesis do you want to test; what findings do you want to model). Don't just list a general domain (e.g., memory); you should say what hypothesis you want to test about memory, and/or what specific memory findings you want to model. You should also provide a “first pass” description of what you propose to modify in a model to answer your question (e.g, add a layer, add a connection, “lesion” units, change learning rate, modify inhibition parameters, etc.). You don't need to know all the details (this is part of the explorations you will do in your actual project), but I do want to see that you've started to put some thought into what you will do. You will be graded on what you do with your model, not how complex your model is. Projects that do interesting things with simple models will fare better than projects where the student spent all of their time trying to get a complex architecture to work, and didn't have any time left to actually run any interesting simulations.

Make sure that the modeling project is a good fit for your technical expertise. We will be around to help you solve problems, but there are limits on what we can do, given the size of the class. As stated above,

we would much prefer that you do interesting things with a simple model or modification of a textbook simulation.

General advice on choosing a topic

Read ahead in the book & see if any models are particularly interesting to you. In the past, some of the best student projects have involved taking an existing book project & modifying it and/or applying it to a new dataset. You don't have to build a totally new project from scratch to get a good grade!

Once you have an idea for a topic, search for related references on pubmed, google, and/or google scholar.