Open Access Neurophysiological Data
Data from the Collaborative Research in Computational Neuroscience program
https://crcns.org/data-sets

The Collaborate Research in Computational Neuroscience is a joint program between the NSF (National Science Foundation) and NIH (National Institutes of Health). Their website hosts a large variety of neuroscience data from many different model systems (including mammals, insects and birds) and from experiments looking at many different systems (including visual cortex, motor cortex, eye movements, and several others.)

The data come in different formats, but the data sets are well documented. Working with these data sets will require some additional effort on your part because you will need to become familiar with the data sets and the file formats. However, there are so many different sets here, we're sure there will be something to excite everyone! And the techniques you learned in the course can surely be applied in many different ways.

Here is an article profiling one of the data sets on the site: http://f1000research.com/articles/3-98/v2