In case of any disagreement between this document and the exam itself, you should of course follow the instructions on the exam.

Question 1. **(30 points)**

In this question, you will be shown many small pieces of code (1-10 lines each) and, for each case, you will need to determine what the code outputs. This question will touch on everything we have covered in the course: data types (integers, strings, float, Booleans), Boolean expressions and operators (less than, greater than, equal, not equal, and, or, not), conditionals (if/else), loops (for/while), numpy arrays, functions, and floating point issues.

Question 2. **(4 points)**

You will be asked to (a) convert a base-10 number to binary and (b) convert a binary number to base-10.

Question 3. **(20 points)**

A question asking you to write Python code to solve a differential equation like in the physics and biology tutorials. Part of the program will be provided and you will need to complete it.

Question 4. **(15 points)**

A question asking you to write Python code related to one of the homework assignments. This question is meant to be easy if you did the assignments and understand the solutions.

Question 5. **(20 points)**

A question that tests your understanding of functions and of the documentation (comment statements) that describe how functions work, like the comments you wrote for each of the three functions in Assignment 2. You will be asked to read the documentation for a function and then use it perform a certain task that is very similar to things you have done in this course. Part of a program will be provided and you will need to complete it.

Question 6. **(11 points)**

A question directly related to the physics/Python tutorial (week of October 5). You will be shown a program that attempts to do something like in the physics tutorial but has a mistake in it, and you will need to identify the problem.

Note: you do not need to memorize any plotting syntax for this exam.