

Name:

On Pre-flights:

- If you work with anyone else, document what you worked on together.
- If you are not using python, then substitute your language of choice when Python is specified.

Do not write in the table to the right.

Problem	Points	Score
1	10	
2	5	
3	5	
4	7	
5	4	
6	2	
7	12	
Total:	45	

1. (a) (2 points) How many columns and how many rows are created in the array with the command:
`np.zeros((4,6))`

- (b) (4 points) Name 4 ways to create an array with 2 columns and 3 rows. Bonus point if you can come up with a 5th way.

- (c) (3 points) Name 3 ways to automatically create an array/list containing the following numbers (without hard coding in the numbers):
`[0, 2, 4, 6, 10, 12]`

- (d) (1 point) How do I convert the following array to an array with 4 rows and 2 columns:
`tmp1 = np.array([0, 2, 4, 6, 10, 12, 14, 16])`

2. (a) (3 points) How does the dtype differ from standard python integers and floats in terms of memory management and precision?

- (b) (2 points) What is the default dtype in an array of mixed types?

3. (a) (3 points) How would you return a slice of the array *tmp1* from Question #1d that goes from 0 to 16 counting by 4s and save it to a variable named *tmp2*?

- (b) (2 points) Now, if I set

tmp2[1]=0

What does *tmp1* look like given the method chosen for part a?

4. (a) (3 points) In your own words, what are structured arrays?

- (b) (4 points) Create a structured array to store 2 HW assignments, 3 preflights, and one project for 5 people.

5. (4 points) Name two ways to add the following arrays together using *built-in* methods or functions:

x = np.array([1, 2]) *y* = np.array([3, 4])

What are some advantages/limitations of each approach used?

6. (2 points) In your own words what are Python ufuncs?
7. (a) (3 points) What is one concept that you found difficult in the reading?
- (b) (3 points) What about the class structure works for you?
- (c) (3 points) What about the class structure **does not** work for you?
- (d) (3 points) What is something we should be doing in class but aren't?