

# Programming Research Algorithms: Schedule for 5783

The schedule is subject to change.

Week	Lecture topics	Assignment topics [each assignment has detailed instructions, which are currently written in Hebrew only]
1 .	<b>Paper:</b> Reading a research paper: how do you start? What is the paper structure? What to note on first and second reading? <b>Python 1:</b> operators, flow control, functions, args, kwargs, lambda, annotation, files, exceptions, doctest.	<b>Python:</b> functions. <b>Paper:</b> choose a paper and get my approval [to week 2]. After approval: summarize paper in your own words [to week 3].
2 .	<b>Python 2:</b> OOP, decorators, inheritance, encapsulation, abstract class, magic methods, operator overloading, context manager.	<b>Python:</b> OOP
3 .	[presentation of papers]	<b>Paper:</b> create detailed running examples for the algorithm in your paper.
4 .	<b>Python 3:</b> design patterns: cache, iterators, generators; strategy pattern.	<b>Python:</b> design patterns.
5 .	[presentation of running examples]	
6 .	<b>Python 4:</b> development process: virtual environments, unittest, pytest, logging, github actions.	<b>Python+ Paper:</b> find an open-source library where your algorithm can fit; write headings and tests for your algorithm.
7.	<b>Python 5:</b> libraries for scientific programming: numpy, scipy, matplotlib, networkx, cvxpy.	<b>Python:</b> num-stack.
8.	[presentation of headings and tests]	-
9 .	<b>Python 7:</b> performance improvements: multithreading, multiprocessing, cython, cppy, pypy, numba	<b>Paper:</b> implement your algorithm.
10 .	[presentation of implementations]	<b>Python+ Paper:</b> improve performance of your algorithm.
11 .	<b>Python 8:</b> building simple websites using flask and Google spread .	<b>Python+ Paper:</b> build a website for demonstrating your algorithm.
12 .	<b>Python 9:</b> publishing Python libraries in PyPI.	<b>Python+ Paper:</b> either pull-request your implementation into an existing library, or publish your algorithm as a new library in PyPI.
13 .	[final presentations]	