

Syllabus

This course is designed to teach you a flexible attitude toward problem solving. I've divided the attitude into eight skills or tools. There are others, and more detail on each, but life is short and these eight make a decent toolkit.

Logistics

Meeting times: Monday, Wednesday, Friday, 11-12, room 4-231, for the four weeks of IAP, which is Jan 5–30 inclusive (not including Martin Luther King day, Jan 19).

Website: mit.edu/18.098 will have class notes (soon to be a textbook), problem sets, solutions, and various enjoyable links and references.

My contact information: sanjoy@mit.edu, Room 5-122, x3-0602.

Grading

The course is graded P/D/F based on problem sets and class participation. **I expect and hope to pass everyone, so learn, enjoy, and don't stress.**

Likely schedule of topics

Lecture	Date	Topic
1	Jan 05 (M)	Dimensions
2	Jan 07 (W)	Extreme cases
3	Jan 09 (F)	Application: Drag
4	Jan 12 (M)	Discretization
5	Jan 14 (W)	Picture proofs
6	Jan 16 (F)	Application: Pendulum period
7	Jan 21 (W)	Taking out the big part
8	Jan 23 (F)	Analogy
9	Jan 26 (M)	Operators
10	Jan 28 (W)	Generalization
11	Jan 30 (F)	Application: Singing logarithms

Problem sets

There will be four problem sets, each covering one week (two tools). Collaboration is fine and encouraged. Write up your own problem set; acknowledge significant help, whether from animate or inanimate sources just as you would in an academic paper.

The approximate problem-set schedule is

Problem set	Topics	Available	Due
1	Dimensions, Extreme cases	Jan 07	Jan 12
2	Discretization, Picture proofs	Jan 12	Jan 21
3	Taking out the big part, Analogy	Jan 21	Jan 26
4	Operators, Generalization	Jan 26	Jan 30

Note that the last problem will be due on Friday to give you the maximum time to work on it before IAP finishes that day.

I'll hand out solutions in the lecture where the problem set is turned in, and post them online. Problem sets will be graded using a light touch:

- P** A decent effort
- D** Not a decent effort
- F** Did not turn in, or did make even a decent effort!

Course notes and optional reading memos

I will post notes after each class, so don't worry much about taking notes in class.

Optional: If you would like to help me improve the course notes before they become a textbook (in a month or so!), you can write *reading memos*. They are optional and much appreciated. I'll explain them in the second class and in the optional section of problem set 1.