

## WEEK 7 (OCT 24-OCT 30)

Below is a screenshot of the calendar from the syllabus. It has been modified to take care of the fact that we have fallen behind just a bit. Note that the schedule is tentative.

### Calendar

This is a tentative schedule for the term (modified on October 23).

Week	Textbook Section	Evaluation	Note
Sep 12–Sep 18	2		
Sep 19–Sep 25	2		
Sep 26–Oct 2	3	PS 1 due on Oct 2	
Oct 3–Oct 9	4.1, 5		
Oct 10–Oct 16	5	PS 2 due on Oct 16	No lecture on Oct 10
Oct 17–Oct 23	5		
Oct 24–Oct 30	5, 7	Midterm project due on Oct 24	
Oct 31–Nov 6	7, 8	PS 3 due on Nov 6	
Nov 7–Nov 13			Reading week
Nov 14–Nov 20	9	PS 4 due on Nov 20	
Nov 21–Nov 27	9		
Nov 28–Dec 4	10	PS 5 due on Dec 4	
Dec 5–Dec 9	10		Make up class on Thursday

**Week 7.** The plan is to talk do planar graphs, graph colourings (especially the 5 colour theorem) and begin on the Inclusion-Exclusion principle.

1. Read [Planar graphs](#) (Section 5.5 of the textbook)
2. Read [The Inclusion-Exclusion Formula](#) (Section 7.2 of the textbook). There is another version of the Inclusion-Exclusion Formula), namely that if  $A_1, \dots, A_n$  are finite sets, then

$$\left| \bigcup_{i=1}^n A_i \right| = \sum_{k=1}^n (-1)^{k+1} \sum_{1 \leq i_1 < \dots < i_k \leq n} \left| A_{i_1} \cap \dots \cap A_{i_k} \right|.$$

See if you can prove it by induction. Also see if you can prove the book's version from the above version.