18.703 Spring 2018, Syllabus

Basic information.
- Teacher: Cris Negron
  - Email: negronc@mit.edu
  - Office: 2-246A.
  - Office hours: TBD (or by appointment)
- Text: Fraleigh, A first course in abstract algebra
- Time and Location: MWF 11, Room 2-139.

Homework etc. Homework will be due on a weekly basis. Homework will consist of a number of questions out of Fraleigh’s text, as well as some additional questions. The homework list and due dates can be found at math.mit.edu/~negronc/HW.pdf.

We will use Stellar to record grades. Homework is to be turned into the 703 HW box, by the math administrative offices. If some extenuating circumstances arise please speak with me, at which point I will probably point you to Student Support Services (S3) studentlife.mit.edu/s3

Lowest HW score will be dropped.

There will be three (3) in class exams (1 Quiz, 2 Tests). There will be no “final” during finals week.

Grade breakdown. 60% HW, 5% Quiz, 15% Test 1, 20% Test 2.

General rules. There are no make ups, and no late homework will be accepted. Please don’t do ridiculous things in relation to the class. Do not leave in the middle of class. If you come to class, stay for the allotted time. Of course, there are many legitimate reasons to have to leave a class before it is over (e.g. you have some appointment). In that case, all is well, please just let me know before hand.

Tentative schedule. 12 Mondays, 14 Wednesdays, 13 Fridays = 39 classes
Test dates will not be changed

- (L 1) groups
- (L 2) group tables & cyclic groups
- (L 3) cyclic groups
- (L 4) permutation groups, braid groups, dihedral groups
- (L 5) $\mathfrak{S}_n$, $B_n$, $D_n$
- (L 6) $\mathfrak{S}_n$, $B_n$, $D_n$
- (L 7: Feb 20) Lagrange’s theorem
- (L 8: Feb 21) morphisms
- (L 9: Feb 23) morphisms
- (L 10: Feb 26) normal subgroups & conjugacy classes
- (L 11: Feb 28) quotient groups
- (L 12: Mar 2) Quiz
- (L 13: Mar 5) classification of fin gen’d abelian groups
- (L 14: Mar 7) classification of fin gen’d abelian groups
- (L 15: Mar 9) group actions
- (L 16: Mar 12) Burnside’s formula
• (L 17: Mar 14) Sylow’s theorem
• (L 18: Mar 16) Sylow’s theorem
• (L 19: Mar 19) review ?
• (L 20: Mar 21) Test 1
• (L 21: Mar 23) rings and fields
• (L 23: Apr 2) rings and fields
• (L 23: Apr 4) integral domains
• (L 24: Apr 6) fund theorem, ideals, quotients
• (L 25: Apr 9) quaternions
• (L 26: Apr 11) polynomial rings
• (L 27: Apr 13) Eisenstein’s criterion
• (L 28: Apr 18) PIDs
• (L 29: Apr 20) PIDs
• (L 30: Apr 23) Euclidean domains
• (L 31: Apr 25) UFDs
• (L 32: Apr 27) pre-Galois theory (sect. 31)
• (L 33: Apr 30) pre-Galois theory (sect. 33)
• (L 34: May 2) pre-Galois theory (sect. 48)
• (L 35: May 4) Lie algebras
• (L 36: May 7) Lie algebras
• (L 37: May 9) Representations of Lie algebras
• (L 38: May 11) Review
• (L 39: May 14) Test 2
• (L 40: May 16) The future of algebra!

Cris Negron, Department of Mathematics, Massachusetts Institute of Technology, Cambridge, MA, USA
E-mail address: negronc@mit.edu