**Math 120A Suggested Syllabus**

(Based on 29 lectures)

**Text:** *Introduction to Group Theory Learning by Doing*

*by Neil Donaldson, Michael Hehmann, Alessandra Pantano*

|  |  |  |
| --- | --- | --- |
| **Lecture**  | **Section**  | **Topic**  |
| 1 | 1 | Introduction and examples |
| 2 | 2 | Binary Operations |
| 3 | 2 | Continued |
| 4 | 3 | Isomorphisms of Binary Structures |
| 5 | 3 | Continued |
| 6 | 4 | Groups  |
| 7 | 4 | Continued |
| 8 | 4 | Continued |
| 9 | 5 | Subgroups  |
| 10 | 5 | Continued |
| 11 | 6 | Cyclic Groups  |
| 12 | 6 | Continued |
| 13 | 8 | Permutation Groups  |
| 14 | 8, 9  | Permutation Groups, Orbits, Cycles  |
| 15 | 9 | Transpositions and the Alternation Group  |
| 16 |   | Review  |
| 17 |   | **Midterm**  |
| 18 | 10 | Cosets and Lagrange’s Theorem  |
| 19 | 10 | Continued |
| 20 | 11 | Direct Products (*Optional*- Fundamental Theorem of Finitely Generated Abelian Groups)  |
| 21 | 11 | Continued |
| 22 | 13 | Homomorphisms  |
| 23 | 13 | Continued |
| 24 | 14 | Factor Groups  |
| 25 | 14 | Continued |
| 26 | 15 | Factor Group Computations  |
| 27 | 15 | Continued |
| 28 | 34 | First Isomorphism Theorem (*Optional*)  |
| 29 |  | Review  |