# Information
## Math 339

**Professor** Marcello Lucia
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**Time and Place** Monday, Wednesday: 6:30–8:10pm, 1S-102

Office hours:
Monday: 5:30–6:20pm and 8:10–9:00pm
Wednesday: 5:30–6:20pm

**Textbook** Contemporary Abstract Algebra, by *J.A. Gallian* (7th edition)
Publisher: Brooks/Cole (2010 or 2006)
ISBN-13: 978-0-547-16509-7
ISBN-10: 0-547-16509-9

**Course Outline** This course aims to study algebraic structures that arise naturally in different fields of mathematics.

**Course Grade** The final course grade is determined as follows:

| | |
|---|---|
| **Quizzes, Homeworks** | 10% |
| **First test** | 25% |
| **Second test** | 25% |
| **Final Exam** | 40% |

*First test*: October 10
*Second Test*: November 19

**Integrity policy** Please refer to
`http://www.cuny.edu/about/info/policies/academic-integrity.pdf`

**Cell phone** Let us stay focused on the class !
Thus, cell phone should be switched off.

**Lesson Plans** Below, each lesson corresponds to a 100minutes class

| Lesson | Chapter | Topics | Homework |
|---|---|---|---|
| 1 | 0 | Modular arithmetic (August 27) | p.21 |
| 2 | 0 | Math induction, equivalent relations | p.22-23 |
| 3 | 1 | Symmetry, First examples of groups | |
| 4 | 2 | Groups | p.52-54 |
| 5 | 3 | Subgroups | p.64-66 |
| 6 | 4 | Cyclic groups | p.81-82 |
| 7 | 4 | Subgroups of cyclic groups | p.83-85 |
| 8 | 5 | Permutation groups, signature of a permutation | p.113-117 |
| 9 | 5 | Applications (15-puzzle, Rubik's cube $\cdots$) | |
| 10 | | **Test 1** (October 10) | |
| 11 | 6 (and 10) | Homomorphism, Isomorphisms, Cayley's Theorem | p.133-135 |
| 12 | 7 | Cosets, Lagrange's Theorem | p.149-150 |
| 13 | 7 | Applications of cosets | p.150-151 |
| 14 | 8 | Direct Products of groups | p.167 |
| 15 | 8 | Applications (data security) | |
| 16 | 9 | Normal subgroups | p.193 |
| 17 | 9 | Normal subgroups | p.193-194 |
| 18 | 10 | First Isomorphism Theorem | p.212-214 |
| 19 | 11 | Structure of finite abelian groups | p.226-228 |
| 20 | 11 | Structure of finite abelian groups | p.226-228 |
| 21 | | **Test 2** (November 19) | |
| 22 | 12 | Rings | p.242-244 |
| 23 | 12 | Rings | p.242-244 |
| 24 | 12 | Subrings | p.212-214 |
| 25 | 13 | Integral domains | p.259-260 |
| 26 | 13 | Fields | p.259-260 |
| 27 | 22 | Finite fields | p.389-390 |
| 28 | | Review (December 12) | |