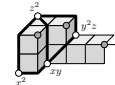


$$S \longleftarrow S^{10} \longleftarrow S^{15} \longleftarrow S^6 \longleftarrow 0$$

$$\begin{array}{ccc} & 1 & 0 \\ & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{array} \quad \begin{array}{ccc} & 0 & 0 \\ & 1 & 2 \\ 1 & 2 & 2 \\ 1 & 2 & 2 \end{array} \quad \begin{array}{ccc} & 0 & 0 \\ & 0 & 1 \\ 0 & 1 & 1 \\ 0 & 1 & 1 \end{array}$$



combinatorial commutative algebra

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Instructor.

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1.415.338.7720

Meetings.

bog. LMV 1:00-2:00. Z-102.

sf. MWF 12:10-1:00. Thornton 211.

Office hours.

Mondays 2:00-4:00 in Thornton 927.

Course website.

<http://math.sfsu.edu/federico/cca.html>

You are expected to visit this website often, and participate actively on the online discussion forum, which will be a very useful source of projects. On the website you will find, among others:

- the homework assignments,
- some suggested final projects,
- the lecture notes,
- links to the lecture videos, and
- a link to the online discussion forum.

Textbook.

There is no required book; I will post lecture notes online. The following books would be useful but none are required. Miller-Sturmfels is the most relevant reference.

- Bruns and Herzog. *Cohen-Macaulay rings*.
- Cox, Little, and O'Shea. *Ideals, varieties, and algorithms*.
- Dummit and Foote. *Abstract algebra*.
- Hibi. *Algebraic combinatorics on convex polytopes*.
- Miller and Sturmfels. *Combinatorial commutative algebra*.
- Stanley. *Combinatorics and commutative algebra*.
- Sturmfels. *Gröbner bases and convex polytopes*.

Prerequisites.

Modern Algebra 2 (SFSU) / Algebra Abstracta 2 (Los Andes).

Grading.

50%: Homework, tentatively due by e-mail on 2/4, 2/18, 3/4, 3/18, 4/3. LaTeX preferable.

10%: Light homework, tentatively due by e-mail on 4/8, 4/22, 4/29, 5/6, 5/13. LaTeX preferable.

10%: Project proposal, due on 4/15. LaTeX mandatory.

30%: Final project in pairs, due on 5/20. LaTeX mandatory.

10%: Possible incentive for **active and valuable** participation in the online discussion board.

10%: Incentive for projects by a Bogotá and a San Francisco student.