

# COMMUTATIVE ALGEBRA

MTH 518/618, SEMESTER 1, 2017-2018

## COURSE INFORMATION

- **Instructor:** Dr. Sanjay Kumar Singh <sanjayks@iiserb.ac.in>
- **Office:** 210, Academic Building 1.
- **Email:** sanjayks@iiserb.ac.in.
- **Webpage:** <http://home.iiserb.ac.in/~sanjayks>.
- **Office Hour:** Wednesday 5.00 – 6.00 PM. If you cannot come during my office hours please send me an email to make an appointment.

The aim of this course is to introduce commutative algebra. This theory has developed not just as a standalone area of algebra, but also as a tool to study other important branches of Mathematics including Algebraic Geometry and Algebraic Number Theory.

**Syllabus:** The official Course Syllabus is as given in the Course Contents booklet

*[http : //acad.iiserb.ac.in/cc/mth518.php](http://acad.iiserb.ac.in/cc/mth518.php)*

### Textbook:

- **Atiyah, M., and Macdonald, I., Introduction to Commutative Algebra,** Addison-Wesley, 1969.

### Reference books:

- Eisenbud, David. Commutative Algebra: With a View Toward Algebraic Geometry. New York, NY: Springer-Verlag.
- Lang, S., Algebra Graduate Texts in Mathematics 211, Springer-Verlag, 2002.
- Reid, Miles. Undergraduate Commutative Algebra: London Mathematical Society Student Texts. Cambridge, UK: Cambridge University Press.
- Balwant Singh, Basic Commutative Algebra.
- Gopalakrishnan N.S., Commutative Algebra.
- Matsumura, Hideyuki, Commutative algebra. Second edition. Mathematics Lecture Note Series, 56.
- Jean-Pierre Serre, Local algebra. Springer Monographs in Mathematics.
- Sharp, R. Y., Steps in commutative algebra. London Mathematical Society Student Texts, 51. Cambridge University Press.
- Zariski, Oscar; Samuel, Pierre, Commutative algebra. Vol. 1, 2.

**Assignment.** There will be 4 assignment in this course. The homework assignments will be posted on the course webpage.

You are encouraged to work together on assignment problems, but **everyone has to write up the solutions independently**. Please order the pages and staple the pages. Unreadable homework will not be corrected. No late homework will be accepted.

**Home work and class exercise.** In every class you will get some home work which you don't need to submit. You can discuss it in office hours.

**Grading Policy:**

- Final Semester Exam: 50%
- Mid Semester Exam: 30%
- Quiz: 10%
- Weightage for other components (surprize quizzes/assignments/attendance/class presentation etc.) 10%.

**Quiz:** There will be one planned quiz and two surprise quizzes in the semester.

\*. In case of any further questions regarding the course, please send me an email.