

COMMUTATIVE ALGEBRA

MTH 518/618, SEMESTER 1, 2021-2022

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>.
- **Google Online Meeting:** Wednesday 2.00 – 3.30 PM.

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 no assignment in this course. The homework assignments will be posted on the course webpage. You are encouraged to solve all problems given in the text book.

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 to me.

Grading Policy: The grading policy for the 2021-22-I Semester is divided into 3 following components

- Participation of students in the course (10%)
(It will be based on your participation and few surprise questions in the class)
- Continuous assessment (70%) (2 Quizess + 2 Presentations each of 70/3 Marks)
Policy for presentation: First, you will submit a note on a given topic by the instructor. After looking at it, I may ask you to present online or make a video and upload it. For writing notes, it is suggested that you use latex.
- Final Assessment (20%)

Quiz: There will be two quizess in the semester. The dates will be announced in the class.

Office Hours: By appt.

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