Galois Theory

ABOUT THE COURSE:

Galois Theory is one of the most important and mathematically elegant unifying principles in algebra. It was created in the late 19th century by the French mathematician Evariste Galois. Galois Theory is a branch of abstract algebra that is primarily concerned with the structure of polynomial equations. It provides a powerful tool for understanding the relationship between a polynomial equation and its roots.

Course Outline:

1. Introduction to Groups
2. Introduction to Rings
3. Introduction to Fields
4. Introduction to Field Extensions
5. Introduction to Galois Groups
6. Introduction to Galois Theory
7. Applications of Galois Theory
8. Review and Assessment

INSTITUTE: IIT Madras

ADVISORY BOARD:

Certification:

The course will be assessed through internal assessments and a final examination. To pass the course, students must achieve a minimum of 50% in the final examination.

SUGGESTED READING MATERIALS:


Course Description:

This course is designed for students who have a strong background in abstract algebra. It is intended for those who are interested in pursuing advanced studies in mathematics or related fields. The course will cover the fundamental concepts and theorems of Galois Theory, with a focus on their applications in algebraic number theory and algebraic geometry.

Target Audience:

- Students enrolled in undergraduate programs in mathematics
- Researchers interested in algebraic structures
- Teachers and lecturers in the field of mathematics

Course Structure:

- Week 1: Introduction to Groups
- Week 2: Introduction to Rings
- Week 3: Introduction to Fields
- Week 4: Introduction to Field Extensions
- Week 5: Introduction to Galois Groups
- Week 6: Introduction to Galois Theory
- Week 7: Applications of Galois Theory
- Week 8: Review and Assessment

About the Instructor:

Prof. B. S. Sohn is a Professor of Mathematics at the University of Wisconsin-Madison. He received his Ph.D. in Mathematics from the University of California, Berkeley, in 1983. His research interests are in the areas of algebraic number theory and algebraic geometry.