AS MATHEMATICS COURSE
(Offered in AY 2017/18 Semester 1)

Course Code: AAM43H

Course Title: Galois Theory

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Course Description:

You have learnt in school that the roots of a quadratic equation $ax^2 + bx + c = 0$, where $a \neq 0$, are given by the formula $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$, which is obtained from the coefficients a, b, c by performing the four standard operations of addition, subtraction, multiplication and division, as well as extraction of root. There are also similar formulas that give the roots of cubic and quartic equations in terms of the coefficients. However, there are no formulas for quintic and higher degree polynomial equations. Galois Theory, one of the most spectacular and beautiful theories in mathematics, explains why there are formulas for quadratic, cubic and quartic equations but not for polynomial equations of degree higher than 4. It establishes connection between the theories of polynomial equations, field extensions and finite groups.

We shall use the book by Stewart listed below as textbook. The pre-requisite for taking this course is AAM33E Modern Algebra.

Textbook:

Stewart, I.N., *Galois Theory*, 4th edition, CRC Press, 2015. (Available in NIE Library as e-book.)

Assessment Mode:

Quizzes, test, participation, final exam