Minnesota State University Moorhead

MATH 676: Abstract Algebra & Galois Theory

A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 3

Lab Hours/Week: 0

OJT Hours/Week: *.*

Prerequisites: None

Corequisites: None

MnTC Goals: None

The main goal of this course is to provide an introduction to advanced theory of polynomials and their roots. This course will also establish basic elements on algebraic structures such as groups, rings, and fields. Special attention will be given to polynomial rings and their quotients, extension fields, and the solution of polynomial equations via radicals.

B. COURSE EFFECTIVE DATES: 02/01/2017 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

D. LEARNING OUTCOMES (General)

1. Determine the kind of roots of polynomials, in particular whether a polynomial has rational or irrational, real or complex roots. Determine the multiplicity of roots. Understand the unifying picture underlying topics usually taught in a College Algebra classes. Submit complete written answers to the instructor.
2. Discuss the solvability by radicals of given polynomial equations. Submit complete written answers to the instructor.
3. Show knowledge of basic properties of algebraic structures, such as rings, fields, and groups, deliver a short presentation on selected topics.
4. Show knowledge of the the proof of the fundamental theorem of Galois Theory and all the elements which it entails such as polynomial rings, field extensions, automorphism groups. Deliver a short presentation on selected topics.
5. Solve polynomial equations of degree less than 5, outline key steps in algebraic computations and submit complete written answers to the instructor.

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted