SYLLABUS FOR MAT2070A - FALL 2023

Description: This course is intended as an introduction to modern abstract algebra and the algebraic way of thinking in advanced mathematics. The course focuses on basic algebraic concepts which arise in various areas of advanced mathematics, and emphasizes on the underlying algebraic structures which are common to various concrete mathematical examples. Students are expected to have taken MATH1010 and MATH1050. Having taken MATH 1030 is very helpful.

Teachers:

(1) Instructor: Michael McBreen,
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(2) TA: Omega Tong
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Topics include:

(1) Group Theory - examples of groups including cyclic groups, dihedral groups and permutation groups. Subgroups, Lagrange's theorem and group homomorphisms.
(2) Ring Theory - examples of rings including the ring of integers and polynomial rings, integral domains, fields, ring homomorphisms, ideals and quotient rings.
(3) Field Theory - examples of field extensions and finite fields.

Texts:

(1) Lecture notes to be posted on Blackboard.
(2) (optional) Artin: Algebra, Prentice Hall, 2nd edition.
(3) (optional) Fraleigh: A first course in Abstract Algebra, Addison-Wesley, 7th edition.

Homework: Homework will be administered using Blackboard. You need to submit answers on Blackboard.

Assessment Scheme:

(1) Homework 20%
(2) Midterm 30%
(3) Final Exam 50%