SYLLABUS FOR MAT2070A - FALL 2022

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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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 and WebWork. We use two platforms to handle problems of different types. You need to submit answers online at the platform where the homework problem is posted. Announcements of posted homeworks on either platform will be made on blackboard.

   To login webwork for MATH2070, use your CUHK ID number and OnePass password. If you register the course later than the usual, you may be unable to login. Contact Prof. McBreen (mcb@math.cuhk.edu.hk) for any such issues.

Assessment Scheme:

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

WebWork: The WebWork scores are not shown on blackboard grade center. In the end it will contribute 1/4 of the Homework scores. We give it less weight because one can keep trying on WebWork and only submit answers when one get everything right. A large precent of people do all WebWork problems right. However, we emphasize that it is important to do these exercises: we designed the problems so that you can drill on definitions, see examples, and learn some new supplementary results.