

A student guide for the course MMA501 — Abstract algebra

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<https://www.mdh.se/ukk/personal/maa/ssv01>

In this document, we gather all the necessary information concerning the course MMA501 — Abstract algebra.

1 Aim

Abstract algebra is a subject focused on understanding of algebraic structures and their properties, their connections with each other and other parts of mathematics and also some of their applications.

Central concepts are:

- ☞ groups;
- ☞ rings and algebras;
- ☞ fields.

2 Lectures and seminars

During the lectures, the teacher will introduce some part of the course and also the students will have opportunities to participate in solving some problems under the teacher's supervision. Problems for home work training are those from the corresponding parts of the course literature. Recommended exercises numbers are listed at the end of this study guide.

Course syllabus is available at

https://www.mdh.se/utbildning/kurser/kursplaner-1.35552?kursplan=27142&l=en_UK

3 Examination

Final exam is a written home assignment examination consisting of examination problems and theoretical questions that need to be solved and handed in within three weeks after getting the examination problems at the end of the course. The grades 3, 4 or 5 and ECTS grades are given depending on correctness and details in the handed in solutions and answers to the questions. In some cases it might be complemented with additional oral exam on the material related to some of the solutions handed in to clarify the level of understanding of the material.

4 Course responsible and examiner

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References

Fraleigh, John B. 2003. *A first course in abstract algebra*, seventh edition, Addison Wesley, Boston.

A Recommended exercises

Lecture	Exercises
1	0.4, 0.8, 0.13, 0.25, 0.33, 0.19 , 1.22, 1.31, 1.36.
2	2.3, 2.6, 2.9, 2.12, 2.27 , 3.3, 3.12, 3.17, 3.26 , 4.3, 4.10, 4.13, 4.20, 4.31
3	5.3, 5.10, 5.15, 5.24, 5.29, 5.43 , 6.2, 6.5, 6.9, 6.18, 6.23, 6.26, 6.44 , 7.3, 7.10, 7.19
4	8.3, 8.8, 8.11, 8.18, 8.23, 8.46 , 9.2, 9.7, 9.12, 9.15, 9.30
5	10.4, 10.13, 10.27 , 11.4, 11.9, 11.16, 11.23, 11.46
6	13.3, 13.18, 13.27, 13.44 , 14.3, 14.12, 14.24 , 15.3, 15.14, 15.35
7	18.3, 18.10, 18.15, 18.24, 18.37 , 19.3, 19.6, 19.13, 19.23 , 20.5, 20.14, 20.27
8	21.1, 21.6 , 22.2, 22.7, 22.10, 22.13, 22.24 , 23.3, 23.6, 23.19, 23.36
9	26.3, 26.17 , 27.3, 27.6, 27.24
10	29.2, 29.7, 29.12, 29.29 , 30.2, 30.5, 30.26
11	31.2, 31.22 , 33.5, 33.9
12	48.4, 48.11, 48.18, 48.33 , 49.3, 49.6, 49.9
13	50.3, 50.8, 50.18 , 51.3, 51.11
14	53.5, 53.11, 53.16 , 54.1, 54.8, 54.11