



HÖGSKOLAN I GÄVLE

Arithmetic and Algebra from an Educational Perspective, 4-6 15

cr

Aritmetik och algebra ur ett didaktiskt perspektiv, inriktning 4-6 15 hp

Set by Faculty of Engineering and Sustainable Development

Version

Set at

Valid from

6/3/20

HT2021

Level	G1F
Education level	First cycle
Course identifier	MAG344
Credits	15 cr
Main field of study	Mathematics
Subject group	Mathematics
Disciplinary domain	Natural sciences 100.0 %

Learning outcomes After completion of the course the student shall be able to

Knowledge and understanding

1. give an account of the meaning of concepts in arithmetic and algebra and didactical aspects of these
2. show such knowledge of arithmetic and algebra as needed in professional practice

Competence and skills

3. solve mathematical problems in arithmetic and basic algebra
4. use pedagogical tools to illustrate mathematical concepts and relations, and solve mathematical problems
5. apply didactical methods to explain basic mathematical concepts, relations and problems
- 6: conduct simple analyses of curricula, teaching materials and national tests
7. conduct and analyse interviews with children

Judgement and approach

8. show ability to behave in a professional manner towards pupils.

Course content	<p>Number systems, positional notation Concept and conception of number Arithmetic: natural numbers, integers and simple rational numbers, laws of arithmetic, mental arithmetic, different bases Rational numbers, percent Number theory: basic multiplicative number theory, prime and composite numbers, the fundamental theorem of arithmetic, Euclidean algorithm</p> <p>Algebra: meaning of the equality sign, variables, patterns Linear equations The function concept, proportionality, different representations of functions</p> <p>Basic concepts in set theory and logic Algorithmic thinking Mathematical reasoning and simple proof</p> <p>The use of laborative tools in mathematics teaching Problem solving strategies Basic analysis of curricula, teaching materials and national tests</p>
Teaching	Lectures, problem solving sessions, lab work, and seminars
Prerequisites	Prerequisites in English is missing
Examination	<p>Written exam, written and oral presentation, written test of basic skills and laborative and elective tasks</p> <p>Module 0010 Written examination 9 credits, examines learning outcomes 1-5, grades A-F Module 0020 Written and oral examination 4,5 credits, examines learning outcomes 1-8, grades Pass with distinction, Pass, Fail Module 0040 Laborative and elective tasks 1,5 credits, examines learning outcomes 1, 4 and 5, grades Pass, Fail</p>
Grade	A, B, C, D, E, Fx, F
Other regulations	Degree Criteria for final grade will be given by course responsible or examiner latest at the beginning of the course.
Sustainable environment	A minor part of the course content deals with sustainable development.
Module	
	0010 Written examination 9 cr Grade: AF
	0020 Written and oral examination 4.5 cr Grade: UV
	0040 Laborative studies 1.5 cr Grade: UG