HÖGSKOLAN I GÄVLE

Arithmetic and Algebra from an Educational Perspective, F-3 15 cr

Aritmetik och algebra ur ett didaktiskt perspektiv, inriktning F-3 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	MAG334
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.

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Course content

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
Number theory: basic multiplicative number theory, prime and composite numbers, the fundamental theorem of arithmetic

Algebra: meaning of the equality sign, variables, patterns
Simple linear equations
The function concept, proportionality, different representations of functions

Basic concepts in set theory and logic
Algorithmic thinking
Mathematical reasoning and simple proof

Children's mathematical thinking
The use of laborative tools in mathematics teaching
Problem solving strategies
Basic analysis of curricula, teaching materials and national tests

Teaching

Lectures, problem solving sessions, lab work, and seminars

Prerequisites

Prerequisites in English is missing

Examination

Written exam, written and oral presentation, test of basic skills and laborative and elective tasks

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

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 and elective tasks	1.5 cr	Grade: UG

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