



Mathematical Thinking Course Course Summary

AIMSSEC is the Schools Enrichment Centre of the African Institute for Mathematical Sciences (AIMS) and was established in 2003. The objectives of AIMSSEC are to play a key role in the extension of educational opportunities for disadvantaged communities in South Africa and to raise standards by improving the quality of teaching and learning of mathematics.

AIMSSEC is a community of academics, researchers, didacticians, subject advisers and school teachers; all working in mathematics education; and dedicated to improve the teaching and learning of mathematics. The AIMSSEC community involves all those who have taught on the AIMSSEC courses as well as former participants. There is a shared belief that members must learn from mathematics education research and that teaching for the 21st century mathematics classroom must be dynamic because a variety of skills are needed to cope in the rapidly changing society.

The **Mathematical Thinking (MT)** involves a residential course during school holidays, followed by 3 months of distance learning. All participants are expected to be in residence for the full duration of the course and are taught in different phase groups: Intermediate (IP), Senior (SP) and Further Education and Training (FET). A test is administered at the end of the residential course to assess the content learnt during the course. Each participant is expected to complete 2 assignments following the residential course: the assignments are designed to encourage the participants to reflect on their teaching practice as they embark on a journey of lifelong learning.

At the residential course, sessions run from 08:15 to 20:00 daily, starting with a 90 – minute plenary session **in which teachers from the different phase groups learn together**. The plenary sessions involve mathematical concepts relevant to teaching mathematics across all phases such as such as designing tessellations and studying their occurrence in African art, making mathematical models, incorporation of people mathematics in data handling and graphs, problem solving involving systematic and logical thinking, use of language as a resource in mathematics instruction, investigating how chance (probability) affects daily lives, constructing and using ‘geoboards’, exploring mathematical games and their value in teaching and learning.

The **purpose of the MT course** is to secure and extend mathematics content knowledge and to develop pedagogical insights which lead to inquiry – based instruction. There is an emphasis on **planning for learning** (rather than planning for teaching), differentiation, inclusive learning, progression, reflection on one’s practice using journals and the use of formative assessment tools to identify strengths and weaknesses of learners.

In effort to alleviate the acute shortage of mathematics teachers in South Africa, the MT course **targets teachers** who: are under – qualified; are newly qualified; out – of – field: teaching mathematics yet specialised in teaching a different subject; would like to change from the teacher – centred “chalk and talk” approach to a more learner – centred one; would like to be part of a mathematics community sharing best practices and those intending to further their studies in mathematics education.

Participants who excel in the MT course find themselves better prepared to study the Advanced Certificate in Teaching (ACT), NQF level 6 and the Advanced Diploma in Education (ADE), NQF level 7. A certificate is awarded to those who satisfactorily complete the course. The MT course is

endorsed by the South African Council for Educators (SACE) for 15 professional development points.

The MT course focuses on covering grades 4 and 5 content for the IP group; grades 7 and 8 for the SP group; and grades 10 and 11 for the FET band. The coverage includes number sense; algebra; shapes, space and measures; data handling and probability. The course also includes IT sessions to enhance use of technology in teaching mathematics. During the course, participants explore the use of cost – effective teaching and learning resources.

AIMSSEC is continuously seeking funding to provide bursaries for teachers enrolled to cater for the course fee; therefore, donations are most welcome so that AIMSSEC reaches out and empowers more mathematics teachers. The course fee includes tuition, accommodation, meals and stationery during the residential course. Due to limited funds, bursaries include a contribution to travel expenses for the most economical mode of transport (e.g. Translux or City to City buses).

Applicants must be practicing teachers and admission to the course depends on the support of the applicant's school principal and the head of mathematics. High standards are maintained on the course by a team of local and international experts in mathematics education. The international team provides services on a voluntary basis.

The MT course has been conducted 26 times since 2004 for 1 707 teachers from different provinces in South Africa. For further details, please contact Dr Barrie Barnard at admin@aimssec.ac.za.

Registration to attend the next MT course is open:

[Click here for an application form.](#)

The completed application form must be attached to certified copies of the following documents: ID, payslip, main qualifications and SACE certificate; and emailed, faxed or posted to one of the options below:

Email: admin@aimssec.ac.za

Fax: 086 263 1268

Postal Address: AIMSSEC
MT Course Application
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