

Education in mathematics and informatics in Sarajevo Canton

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University of Tsukuba, July 2006.

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University of Sarajevo

Since the academic year 2005./2006. new system of studies was introduced at University of Sarajevo, the oldest University in Bosnia and Herzegovina.

It is stepping towards new european system of university degrees, with bachelor (6 semesters), master (4 semesters) and doctoral studies.

For those who want to study mathematics and/or informatics, there are two opportunities

- Faculty of Electrical Engineering
- Faculty of Mathematics and Natural Sciences

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University of Sarajevo

Faculty of Electrical Engineering has Department of Computer Sciences and Informatics.

- Prior to reforms it has offered 9 semester study, with graduated engineers degree.
- This is now divided into Bachelor and Master of Informatics studies.

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University of Sarajevo

Faculty of Mathematics and Natural Sciences at Department of Mathematics earlier offered 8 semester study in majors:

- Mathematics *diploma in mathematics*
- Math. & Theoretical Computer Science *diploma in math. and informatics*
- Teaching of Mathematics *professor of mathematics*

There were no studies for degree *professor of informatics*.

There were studies lasting for 4 semesters for teachers in primary school for mathematics and informatics.

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University of Sarajevo

Since the previous academic year, bachelor and master degrees are offered in:

- Mathematics
- Theoretical computer science
- Applied mathematics
- Teaching of mathematics + (Physics or Informatics)

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Highschools in Sarajevo

Curriculum for mathematics and informatics in Bosnia and Herzegovina are well known. But there are several differences applied in Sarajevo Canton. We will try to notify their positive and negative aspects.

- I Gymnasium Curriculum
- II Mathematical Gymnasium
- III International Baccalaureate Program

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Highschools in Sarajevo

I Gymnasium Curriculum

Instead of "classical gymnasium", it is offered to students to choose in last two years one of the majors:

1. Mathematics and informatics
2. Natural sciences
3. Social sciences
4. Language studies
5. Sports

- Students are able to specify earlier their interests
- Best students apply for math/info major
- Earned diploma is the same, without specifying the major

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Highschools in Sarajevo

II Mathematical Gymnasium

Druga gimnazija Sarajevo offers a program called "Mathematical and Informatics Gymnasium".

It lasts for 4 years, and contains one more mathematical subject, with more classes in physics and informatics.

- It supports students wish to learn more
- Recently the interest for this program has decreased.

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Highschools in Sarajevo

III International Diploma Program

Druga gimnazija Sarajevo offers also International Baccalaureate Program, taught completely in English.

- Students choose appropriate level of mathematics to study (standard or high)
- Informatics is not obligatory, but also offered in two levels
- Students have half subjects to study

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Teaching Approaches

I "Classical way of teaching"

Blackboard + Teacher + Textbook
It is useful basically, but not attractive to nowadays students.

II Some ideas from IB model

- Blackboard, teacher and textbook are inevitable, BUT there are*
- Applications in real life
 - Use of technology
 - Presentation of acquired knowledge

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Problems in Teaching

- There is a choice of textbooks in classes, both mathematics and informatics
- It is not rare that schools are not equipped with computers
- Sometimes computers are not used with a full potential
- Unless students choose math/info major in gymnasium, they have informatics for just two years, and even for Year 2, there is only one class per week.
- Current curriculum in Year 2 proposes basics of computer programming. This causes a lot of problems, i.e. missing the equipment or time to show its application, especially when it is taught in "classical way".

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Competitions

Schools in Bosnia and Herzegovina are making efforts to remain competitive in highschool students olympiads in mathematics and informatics.

Bosnia and Herzegovina participates on:

- IMO since 1993. won 3 silver and 21 bronze medals
- IOI since 1996. won 1 silver and 3 bronze medals

- *Interest for competitions decreases on state level, especially in informatics.*
- *This is probably because of great diversity between school curriculums and competition prerequisites.*

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Thank You for Your attention!