

IB COMPUTER SCIENCE

COURSE AIMS

The course is run within the context of the school's mission statement and aims to enhance in all who take part the attributes of the IB's learner profile.

Computer science requires an understanding of the fundamental concepts of computational thinking as well as knowledge of how computers and other digital devices operate.

The Diploma Programme computer science course is engaging, accessible, inspiring and rigorous. It has the following characteristics:

- draws on a wide spectrum of knowledge;
- enables and empowers innovation, exploration and the acquisition of further knowledge;
- interacts with and influences cultures, society and how individuals and societies behave;
- raises ethical issues and
- is underpinned by computational thinking.

SKILLS TO DEVELOP

The core skills for you to aim to develop are:

- **computational thinking** (involving thinking procedurally, logically, concurrently, abstractly, recursively and thinking ahead, and related to your work in TOK);
- **communication** (involving listening to the needs of your end-users, expressing your algorithms and documentation clearly and providing meaningful training);
- **social** skills (involving working together and being sensitive to accessibility, digital divides, data privacy and intellectual property issues);
- **self-management** (involving effective and balanced organisation to optimise your overall well-being);
- **research** (involving effective and targeted questioning, academic honesty and referencing).

During the course, you will develop practical **computational solutions**; you should be able to:

- identify a problem or unanswered question;
- develop appropriate algorithms and express them clearly;
- utilize an experimental and research/inquiry-based approach to problem-solving;
- design, prototype and test a proposed solution;
- liaise with clients to evaluate the success of the proposed solution and make recommendations for future developments; and
- appreciate how theoretical, practical and social limitations affect the extent to which problems can be solved computationally.

TEACHING STYLE

Throughout the course, the teaching will aim to:

- encourage your sense of inquiry;
- focus on the understanding of clear concepts;
- develop your understanding of the subject in both local and global contexts;

ICT/CSC/COURSE SUMMARY

- focus on effective teamwork and collaboration;
- differentiate the level of difficulty to meet your needs as a learner; and
- assess your progress with regular feedback as well as with a final exam.

CORE SYLLABUS CONTENT

SL/HL CORE

The topics that must be studied, including some practical work, are:

- Topic 1: System fundamentals (20 hours)
- Topic 2: Computer organization (6 hours)
- Topic 3: Networks (9 hours)
- Topic 4: Computational thinking, problem-solving and programming (45 hours)

HL EXTENSION

The topics that must be studied, including some practical work, are:

- Topic 5: Abstract data structures (23 hours)
- Topic 6: Resource management (8 hours)
- Topic 7: Control (14 hours)

CASE STUDY

Additional subject content is introduced by the annually issued case study

FINAL ASSESSMENT

Your internal assessment project is worth 20% for HL and 30% for SL, the remainder of your mark is from the external assessment (the exams). SL students sit 2 exam papers (2 hours 30 minutes in total) and HL sit 3 (4 hours 30 minutes in total).

RELATIONSHIP TO OTHER SUBJECTS

Computer science has links with subjects outside of group 4, notably information technology in a global society (ITGS), but it should be noted that there are clear differences between these subjects. If you have not studied ICT or Computing formally pre-IB, your performance in maths and English will be considered as well as your interest and enthusiasm for computing.