

"Each pattern describes a problem which occurs over and over again in our environment, and then describes the core of the solution to that problem, in such a way that you can use this solution a million times over, without ever doing it in the same way twice."

C. Alexander

INTRODUCTION

Computer science is the scientific and mathematical approach in the computing branch. Its subfields can be divided into practical techniques for its implementation and application in computer systems and purely theoretical areas. It focuses on the challenges in implementing computations. For example, programming language theory studies approaches to description of computations, while the study of computer programming itself investigates various aspects of the use of programming languages and complex systems, and human-computer interaction focuses on the challenges in making computers and computations useful, usable and universally accessible to humans.

The ACS(Independent) IB Computer Science course has been designed to cater to the needs of students to see the application of this scientific subject into the different natural sciences namely, Biology, Physics and Chemistry.

The syllabus imbibes the technocratic paradigm to bring out the Engineering approach, the rationalist paradigm to use deductive reasoning in problem-solving and the scientific paradigm which approaches computer-related artifacts from the empirical perspective of the natural sciences.

CHOOSING GROUP 4 SUBJECTS

One or Two Group 4 Subjects?

The study of sciences in the IBDP is much more rigorous compared to that at the secondary school level. The nature of practical work is also more independent and self-driven. Students who wish to take two Group 4 subjects must consider whether they have the aptitude for studying the sciences.

There are no pre-requisites for taking Computer Science.

COURSE CONTENT

At ACS (Independent), Computer Science is offered only at the Higher Level.

Theme A: Concepts of Computer Science(Paper 1)

1. Computer Fundamentals
2. Networks
3. Databases
4. Machine learning
5. Case study

Theme B: Computational Thinking and Problem-Solving (Paper 2)

1. Computational Thinking
2. Programming with Java
3. Object-Oriented Programming
4. Abstract Data Types

ASSESSMENT

Internal Assessment (20 %)

This comprises of an in-depth individual project involving practical application of skills through the development of a product and associated documentation.

External Assessment (80 %)

2 written papers of varying formats but same marks. It covers data-based, short-answer and extended-response questions for paper 1 and extended-response questions in paper 2. The weighting of each paper is as follows:

Paper	Weighting
Paper I	40 %
Paper II	40 %

UNIVERSITY COURSES AND CAREERS

Generally, a Computer Science HL course can lead to the following careers:

Analysts, Programmers, Testers, Graphic designers, Information Research Scientists etc.

It is a branch of Engineering offered in Universities.

However, it should be noted that eligibility requirements vary across universities, hence students are strongly advised to consult the university websites and prospectus for specific details. University eligibility criteria also may change from year to year.

Questions?

For clarifications and queries, please e-mail

Ms Dheepa Murali Narayanan
IB Computer Science Coordinator
dheepa@acsindep.edu.sg

Ms Colleen Ng
Dean of Physics & Computer Science
colleenn@acsindep.edu.sg