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## ECCC SYLLABUS

MODULE: **CS M1** PROGRAMMING

LEVEL: EXPERT (D)

The examination of this module includes all aspects of the Advanced level (C) extended the competencies listed below.

COMPETENCE GROUP	COMPETENCE WITHIN ECCC STANDARDS
1. Security and Error Handling	1.1. Overview of the causes of errors. 1.2. Support for standard exceptions, the use of construction try ... catch .... 1.3. Creating and capturing own exceptions.
2. Introduction into generic programming	2.1. Templates of functions and classes (or generic classes and methods). 2.2. Static and dynamic polymorphism.
3. Communication over the network	3.1. Establishing a TCP connection through the socket. 3.2. Support for application protocols (HTTP, FTP).
4. Database Applications	4.1. Creating a database connection. 4.2. Use the SQL language: querying, creating and modifying the cation tables, rows, data entry. 4.3. Data structures. 4.4. Data visualization.
5. Creating algorithms and programs based on programming tasks	5.1. Selected mathematical algorithms. 5.2. Calculations with complex numbers. 5.3. Monte Carlo method. 5.4. Tables processing algorithms.

Preferred development environment for the realization of the expert-level tasks:

- Java SE Development Kit (JDK) (<http://java.sun.com>)
- Visual Studio Express Edition (<http://www.microsoft.com/express/Downloads>)
- Dev-C++ 5 Beta 9.2 (4.9.9.2) PL ([www.bloodshed.net](http://www.bloodshed.net))