The CERN School of Computing: A Summer University

Since the early seventies CERN has organized the CERN Schools of Computing (CSC), usually held in August/September. They last two weeks and are open to postgraduate students and research workers with a few years of experience in elementary particle physics, in computing or in related fields. Attendance ranges usually from 60 to 80 students, typically of 15 to 30 different nationalities.

Objectives of the school

The school aims at creating a *common technical culture* in scientific computing among young scientists and engineers involved in particle physics or in sister experimental disciplines, as a strategic direction to favour *mobility* and to facilitate the development of large computing-oriented *transnational projects*

Summer University

CSCs are not conferences. They are places to learn advanced *academic* topics, taught by a few high-quality lecturers, what ensures overall coherence. Attendance to the full programme is mandatory, examinations are organized and formal diplomas are awarded. The focus is on delivering *knowledge* rather than *know-how*, which can better be provided in the form of training at home institutes. Knowledge is by nature more persistent, transferable to new contexts, and requires related knowledge to pre-exist.

As a result, CSCs are true summer universities

Theory and practice

The two-week programme of the CSC series is comprised of a series of lectures and *hand-on exercises.*

The hands-on part is a central component of the school, and may include projects carried out by groups of students or contests. To this end, a computing infrastructure is created on the site of the school.

Examination and European Certificate

A final examination is proposed to students since 2002. In case of success, the *CSC Diploma* is delivered by CERN. In addition, since 2008, an independent university, different every year –in practice, the university hosting the school-, *audits the quality of the programme*, of the lecturers and examination, and incorporates the CSC in its official programme. As a result, a formal Certificate of 5 to 6 *ECTS* Credit Points (European Credit Transfer System) is delivered by the hosting University. These may be used by participants engaged in university curricula to obtain credits.

Sport Programme

Introduced a few years ago, the sport programme proposes two to three hours of sport every afternoon to those who are interested. *Socialization and networking* is the other goal of the school. The sport programme not only provides a healthy work-life balance, but it also gives additional opportunities for *interactions* between students, lecturers and organizers. Several of the lecturers act as sport instructors or organizers. Sports usually proposed include swimming, volleyball, basketball, floorball, climbing, squash, badminton, tennis, football, hiking, biking, and whenever possible canoeing, kayaking, sailing, or horseback riding.

Who are the CSC students?

Students apply to the CSC from all over the world. The main selection criterion is the expected *benefits applicants will get* from attending, thus taking into account their academic and technical background and their areas of work.

Origin of students over the past ten years (65 nationalities): *Albania, Algeria, Armenia, Austria, Bangladesh,, Belarus, Belgium, Bosnia & Herzegovina, Bulgaria, Brazil, Bulgaria, Canada, Cameroon, Chile, Colombia, Croatia, Czech Republic, Denmark, Egypt, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, India, Iran, Iraq, Ireland, Israel, Italy, Japan, Kazakhstan, Korea, Lebanon, Lithuania, Macedonia, Malaysia, Malta, Mexico, Moldova, Morocco, New Zealand, Norway, Pakistan, People's Republic of China, Poland, Portugal, Romania, Russia, Serbia and Montenegro, South Africa, Slovak Republic, Spain, Sweden, Switzerland, Taiwan, Turkey, The Netherlands, Tunisia, United Kingdom, Ukraine, USA, Venezuela*

Facts and figures

Since 1970, *35* schools have been organized in *20* different countries, attended by a total of *2237* students. Since the inception of the CSC examination in 2002, *612* participants have successfully passed and took the CERN School of Computing diploma.

CSC 2013: 19 – 30 August, Nicosia, Cyprus

Organized in collaboration with the University of Cyprus

Programme Highlights		
Data Technologies	**Base Technologies**	**Physics Computing**
The Data theme presents the state of the art technologies and options for data storing and management in highly demanding environments. It includes security aspects relevant to data management. The theme is equally divided between lectures and practical exercise sessions.	The Base Technologies theme addresses a selection of the most relevant underlying technologies: software development security, advanced networking, as well as computer architecture. It also offers a range of practical exercises.	The Physics Computing theme focuses on informatics topics specific to HEP. After setting-the-scene lectures, it addresses Software Engineering Techniques, and Data Analysis. The lecturers come from, Croatia, Norway, the USA and the UK to teach theory and practice.

Lecturers

François Flückiger
Benedikt Hegner
Robert G. Jacobsen
Sverre Jarp
Sebastian Lopienski
Andrzej Nowak
Alberto Pace
Danilo Piparo
Ivica Puljak
Benjamin Radburn Smith
Are Strandlie

CSC2013 Organization

Central Management	Director	Francois Flückiger
	Technical Manager	Giuseppe Lo Presti
	Administrative Manager	Fabienne Baud-Lavigne
Advisory Committee	Chair Person	Ivica Puljak
	Examination Coordinator	Ivica Puljak
	Track coordinators	Sebastian Lopienski
		Pere Mato
		Alberto Pace
		Ivica Puljak
		Arnulf Quadt
		Are Strandlie
	Ex-officio members	Frédéric Hemmer
		Panos Razis
Local Organizing Committee	Chair Person	Panos Razis
	Deputy Chair Person	Fotis Ptochos

<table>
<tr><th colspan="3">History of schools</th></tr>
<tr><td>1970</td><td>Varenna</td><td>Italy</td></tr>
<tr><td>1972</td><td>Pertisau</td><td>Austria</td></tr>
<tr><td>1974</td><td>Godöysund</td><td>Norway</td></tr>
<tr><td>1976</td><td>La Gr. Motte</td><td>France</td></tr>
<tr><td>1978</td><td>Jadwisin</td><td>Poland</td></tr>
<tr><td>1980</td><td>Vraona</td><td>Greece</td></tr>
<tr><td>1982</td><td>Zinal</td><td>Switzerland</td></tr>
<tr><td>1984</td><td>Aiguablava</td><td>Spain</td></tr>
<tr><td>1986</td><td>Renesse</td><td>The Nether.</td></tr>
<tr><td>1987</td><td>Troia</td><td>Portugal</td></tr>
<tr><td>1988</td><td>Oxford</td><td>United Kingdom</td></tr>
<tr><td>1989</td><td>Bad Herrenhalb</td><td>Germany</td></tr>
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<tr><td>1997</td><td>Pruhonice</td><td>Czech Rep.</td></tr>
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<tr><td>2011</td><td>Copenhagen</td><td>Denmark</td></tr>
<tr><td>2012</td><td>Uppsala</td><td>Sweden</td></tr>
<tr><td>2013</td><td>Nicosia</td><td>Cyprus</td></tr>
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