



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 *hands-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, **34** schools have been organized in **20** different countries, attended by a total of **2178** students. Since the inception of the CSC examination in 2002, **557** participants have successfully passed and took the CERN School of Computing diploma.



CSC 2012: 13 – 24 August, Uppsala, Sweden

Organized in collaboration with the SNIC-UPPMAX at the Uppsala University



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, computer architecture as well as virtualisation / cloud computing. 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
 Robert G. Jacobsen
 Sverre Jarp
 Sebastian Lopienski
 Pere Mato
 Andrzej Nowak
 Alberto Pace
 Ivica Puljak
 Benjamin Radburn Smith
 Are Strandlie

CSC2012 Organization

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

History of schools

1970	Varenna	Italy
1972	Pertisau	Austria
1974	Godöysund	Norway
1976	La Gr. Motte	France
1978	Jadwisin	Poland
1980	Vraona	Greece
1982	Zinal	Switzerland
1984	Aiguablava	Spain
1986	Renesse	The Nether.
1987	Troia	Portugal
1988	Oxford	United Kingdom
1989	Bad Herrenhalb	Germany
1990	Ysemonde	Belgium
1991	Ystad	Sweden
1992	L'Aquila	Italy
1993	L'Aquila	Italy
1994	Sopron	Hungary
1995	Arles	France
1996	Egmond an Zee	The Nether.
1997	Pruhonice	Czech Rep.
1998	Funchal	Portugal
1999	St. Jablonki	Poland
2000	Marathon	Greece
2001	Santander	Spain
2002	Vico Equense	Italy
2003	Krems a.d. Donau	Austria
2004	Vico Equense	Italy
2005	Saint Malo	France
2006	Helsinki	Finland
2007	Dubrovnik	Croatia
2008	Gjøvik	Norway
2009	Göttingen	Germany
2010	Uxbridge	United Kingdom
2011	Copenhagen	Denmark
2012	Uppsala	Sweden

