ABOUT THE ECAS PROGRAMME

The European Courses in Advanced Statistics (ECAS) are intended to achieve postgraduate training in special areas of statistics for both researchers and teachers at universities. Professionals working in industry and interested in the application of new statistical method are also welcome. The participants are expected to have a good background in statistics at the PhD. Level although not necessarily oriented to the subject of the course. Young researchers especially from all European countries are encouraged to participate and to contribute to an international audience.

The ECAS programme is supported by a group of European statistical societies, including those of Belgium (SBS), France (SFdS), Germany (DSG), Italy (SIS), Spain (SEIO), Sweden (SS) and Switzerland (SSS).

ECAS has organized so far courses on Multivariate Analysis (Italy), Robustness (Germany), Design of Experiments (France), Categorical Data Analysis (The Netherlands), Longitudinal Data Analysis (UK), Time Series Analysis (Spain), Environmental Statistics (Sweden), Bayesian Statistics and Financial Econometrics (Switzerland), Data Mining and Explorative Multivariate Data Analysis (Italy), Regression Quantiles and Applications (Belgium), Structural Equation Models (France), Measurement Errors in Surveys (Sweden), Small Area Statistics In Theory and Practice (Germany).
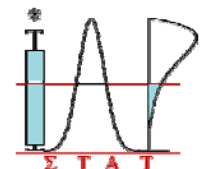
ABOUT CASTRO URDIALES AND SURROUNDINGS

The course will take place in the **International Center for Mathematical Meetings** (**CIEM**, see http://www.ciem.unican.es/) of the University of Cantabria (Spain). CIEM is located in Castro Urdiales (Cantabria), a small town very close to the border between Cantabria and the Basque Country, Northern Spain. It is well connected with Bilbao airport (about half an hour driving).

Accomodation: Viajes El Corte Inglés
congresossantander@viajeseci.es— telephone:+34 942 363 015

	Double room	Single room
Hotel Las Rocas****	94,60€	83,60€
Hotel Miramar****	71,50€	55,00€

Information Address:
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Organizing Committee
Department of Mathematics, Statistics and Computation
Avda. de los Castros, s/n
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39005 Santander

ECAS
European Courses in Advanced Statistics

The 14th course in the ECAS Programme

Functional and Complex Structure Data

Castro Urdiales, Spain
September 17-21, 2013

**A programme of advanced training in statistics
supported by statistical societies in Europe**

Date: September 17-21, 2013

Location: CIEM, Castro Urdiales (Spain); http://www.ciem.unican.es/

Registration form: Please register on our website; http://www.eio.usc.es/pub/ecas2013/

Scientific Committee
- Juan A. Cuesta Albertos, University of Cantabria, Spain
- Pedro Delicado Useros, Polytechnic University of Catalonia Spain
- Wenceslao González Manteiga, University of Santiago de Compostela, Spain

Organizing Committee
- Juan A. Cuesta Albertos, University of Cantabria, Spain
- María José Ginzo Villamayor, University of Santiago de Compostela, Spain
- Wenceslao González Manteiga, University of Santiago de Compostela, Spain
- Alicia Nieto Reyes, University of Cantabria, Spain
- Manuel Oviedo de la Fuente, University of Santiago de Compostela, Spain

Lecturers
- Antonio Cuevas, University Autónoma de Madrid, Spain
- Manuel Febrero Bande, University of Santiago de Compostela, Spain
- Peter Hall, University of Melbourne, Australia
- Victor M. Panaretos, Ecole Polytechnique Fédérale de Lausanne, Switzerland

Topics
- Functional data analysis
- Principal component analysis
- Functional regression: linear, nonparametric, additive, semiparametric and generalized models
- Complex data structures: High dimension data, dependence
- Functional Time series
- Functional classification: discrimination and clustering
- Computational aspects of functional data
- R software

Scope of the Course
The ECAS 2013 session will give a general overview of the methodological and practical aspects of Functional Data Analysis (FDA) with recent advances. Functional data analysis is a branch of statistics that analyzes data providing information about curves, surfaces or anything else varying over a continuum. The continuum is often time, but may also be spatial location, wavelength, probability, etc. The data may be so accurate that error can be ignored, may be subject to substantial measurement error, or even have a complex indirect relationship to the curve that they define.

Models for functional data and methods for their analysis may resemble those for conventional multivariate data, including linear and nonlinear regression models, principal components analysis, and many others. But the possibility of using derivative information greatly extends the power of these methods, and also leads to purely functional models such as those defined by differential equations. Most recent developments will be considered too, and their practical approach will receive attention using the R software. The potential audience of this ECAS Session are PhD students, substantive researchers, methodologists in Mathematics and Computer Science (Bioinformatics, Biostatistics, Epidemiologist), as well as statisticians with interests in FDA. It is assumed that the participants benefit of a good background in statistics up to and including multivariate analysis, and have been exposed to matrix algebra. Participants will learn modeling real data – eventually on their own WIFI compatible laptop.

Language
All lectures will be given in English; work material will also be in English.

Application
The number of participants is limited to 60. University members and PhD students should fill in the attached application. The deadline for reduced application is July 1, 2013.

Travel Information
By plane: Bilbao airport; www.aeropuertodebilbao.net
By bus: The company ALSA (tel: +34 902 422 242) has direct buses to Castro Urdiales (coach station, about 2 km from the CIEM and Hotels) from many cities in northern Spain .

Student short presentation
On Thursday morning, 19th there will be a special session for poster presentations. Poster presenters are invited to introduce their posters during the poster preview. Posters must be presented in A0 (841x1189 mm). Participants are encouraged to submit one contributed paper for presentation at FCSD. The electronic version of the paper must be send to courseFCSD@gmail.com with message subject "FCSD abstract submission" before 1st of July 2013 inclusive.

Registration Fees(*)

	Until July 1		After July 1	
	ECAS member country	Other	ECAS member country	Other
Student	250€	300€	300€	350€
University member	400€	600€	600€	800€
Other	800€	1000€	1000€	1250€
Accompanying persons	125€	125€	150€	150€

SEIO members have a discount of 50€