

**4<sup>th</sup> INTERNATIONAL PhD SCHOOL  
IN FORMAL LANGUAGES AND APPLICATIONS 2004-2006**

Rovira i Virgili University  
Research Group on Mathematical Linguistics  
Tarragona, Spain

**Awarded with the Mark of Quality (Mención de Calidad) by the  
Spanish Ministry for Education and Science, MCD2003-00820**

COURSES AND PROFESSORS 1<sup>st</sup> TERM (MARCH–JULY 2005)

Formal Languages: Foundations, Roots, Sources and Applications	Solomon Marcus, Bucharest
Languages	Zoltán Ésik, Tarragona
Combinatorics on Words	Tero Harju, Turku
Varieties of Formal Languages	Jean-Éric Pin, Paris
Regular Grammars	Masami Ito, Kyoto
Context-Free Grammars	Manfred Kudlek, Hamburg
Context-Sensitive Grammars	Victor Mitrana, Tarragona
Mildly Context-Sensitive Grammars	Henning Bordihn, Potsdam
Finite Automata	Sheng Yu, London ON
Pushdown Automata	Hendrik Jan Hooeboom, Leiden
Turing Machines	Maurice Margenstern, Metz
Computational Complexity	Markus Holzer, Munich
Descriptional Complexity of Automata and Grammars	Detlef Wotschke, Frankfurt
Introduction to Kolmogorov Complexity and Its Applications (for example, in Formal Languages and Automata)	Paul Vitányi, Amsterdam
Patterns	Kai Salomaa, Kingston ON
Infinite Words	Juhani Karhumäki, Turku
Sturmian Words	Jean Berstel, Marne-la-Vallée
Two-Dimensional Languages	Kenichi Morita, Hiroshima
Probabilistic Automata: Background, Related Topics and Generalization	Azaria Paz, Haifa
Grammars with Regulated Rewriting	Jürgen Dassow, Magdeburg
Contextual Grammars	Carlos Martín-Vide, Tarragona
Parallel Grammars	Henning Fernau, Tübingen
Grammar Systems	Erzsébet Csuhaj-Varjú, Budapest
Tree Automata and Tree Languages	Magnus Steinby, Turku
Tree Transducers	Zoltán Fülöp, Szeged
Tree Adjoining Grammars	James Rogers, Richmond IN
Formal Languages and Concurrent Systems	Jetty Kleijn, Leiden
Graph Grammars and Graph Transformation	Hans-Jörg Kreowski, Bremen
Restarting Automata	Friedrich Otto, Kassel
Decision Problems of Rational Relations	Christian Choffrut, Paris

COURSES AND PROFESSORS 2<sup>nd</sup> TERM (SEPTEMBER–DECEMBER 2005)

Formal Power Series	Werner Kuich, Vienna
Fuzzy Formal Languages	Claudio Moraga, Dortmund
DNA Computing: Theory and Experiments	Mitsunori Ogihara, Rochester NY
Splicing Systems	Rani Siromoney, Chennai
Aqueous Computing	Tom Head, Binghamton NY
Cellular Automata	Giancarlo Mauri, Milan
Unification Grammars	Shuly Wintner, Haifa
Context-Free Grammar Parsing	Giorgio Satta, Padua
Probabilistic Parsing	Mark-Jan Nederhof, Groningen
Categorial Grammars	Michael Moortgat, Utrecht
Weighted Automata	Manfred Droste, Leipzig
Weighted Finite-State Transducers	Mehryar Mohri, Florham Park NJ
Grammatical Inference	Colin de la Higuera, Saint-Étienne
Mathematical Foundations of Learning Theory	Satoshi Kobayashi, Tokyo
Natural Language Processing with Symbolic Neural Networks	Risto Miikkulainen, Austin TX
Stochastic Learning Automata	John Oommen, Ottawa ON
Text Retrieval: Foundations	Maxime Crochemore, Marne-la-Vallée
Text Retrieval: Applications	Ricardo Baeza-Yates, Santiago de Chile
Mathematical Evolutionary Genomics	David Sankoff, Ottawa ON
Quantum Automata	Jozef Gruska, Brno
Formal Languages and Logic	Vincenzo Manca, Verona
Codes	Fernando Guzmán, Binghamton NY
Cryptography	Valtteri Niemi, Helsinki
String Complexity	Lucian Ilie, London ON
Image Compression	Jarkko Kari, Turku
Topics in Asynchronous Circuit Theory	John Brzozowski, Waterloo ON
Grammar-Theoretic Models in Artificial Life	Jozef Kelemen, Opava
Syntactic Methods in Pattern Recognition	Rudolf Freund, Vienna
Automata-Theoretic Techniques for Verification and Other Decision Problems	Oscar Ibarra, Santa Barbara CA

<http://pizarro.fll.urv.es/continguts/linguistica/proyecto/grlmc.htm>

#### STUDENTS:

Candidate students for the programme are welcome from around the world. Most appropriate degrees include: Computer Science and Mathematics. Other students (for instance, from Linguistics, Logic or Engineering) could be accepted provided they have a good undergraduate background in discrete mathematics. At the beginning of the first term, a series of lessons on discrete mathematics advanced pre-requisites will be offered, in order to homogenize the students' mathematical background.

Before applying to the programme and in order to check eligibility, the student must be certain that the highest university degree s/he got enables her/him to be enrolled in a doctoral programme in her/his home country.

#### TUITION FEES:

1,867 euros in total, approximately.

#### DISSERTATION:

After following the courses, the students enrolled in the programme will have to write and defend a research project and, later, a dissertation in English in their own area of interest, in order to get the so-called European PhD degree (which is a standard PhD degree with an additional mark of quality). All the professors in the programme will be allowed to supervise students' work.

#### FUNDING:

During the teaching semesters, funding opportunities will be provided by the Spanish Ministry for Education and Science (mobility grants), by the Spanish Ministry for Foreign Affairs (Becas MAE), and by the European Commission (Alban scheme, for Latin American citizens). Additionally, the university may have a very limited amount of economic resources itself for covering the tuition fees, accommodation and living expenses of a few more students.

Immediately after the courses and during the writing of the PhD dissertation, some of the best students will be offered 4-year research fellowships, which will allow them to work in the framework of the host research group.

#### PRE-REGISTRATION PROCEDURE:

In order to be pre-registered, one should post to the programme chairman:

- xerocopy of the main page of the passport,
- xerocopy of the highest university education diploma,
- xerocopy of the academic record,
- full CV,
- letters of recommendation (optional),
- any other document to prove background, interest and motivation (optional).

#### SCHEDULE:

Announcement of the programme:  
July 31, 2004

Pre-registration deadline:  
October 31, 2004

Selection of students:  
November 5, 2004

Starting of the 1st term (tentative):  
March 29, 2005

End of the 1st term (tentative):  
July 11, 2005

Starting of the 2nd term (tentative):  
September 12, 2005

End of the 2nd term (tentative):  
December 23, 2005

Defense of the research project (tentative):  
September 16, 2006

DEA examination (tentative):  
March 17, 2007

#### QUESTIONS AND FURTHER INFORMATION:

Please, contact the programme chairman, Carlos Martín-Vide, at [cmv@astor.urv.es](mailto:cmv@astor.urv.es)

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