

# Zpravodaj

Přírodovědecké fakulty Univerzity Palackého  
Newsletter of the Faculty of Science PU

6

25<sup>th</sup> April 2014



## Introductory word



Dear colleagues, dear students,

We have asked Irena Rachůnková, the Chairwoman of Scientific-pedagogical Council (VPRO), Professor from the Department of Mathematical Analysis and Applications of Mathematics to write an introductory word for the Newsletter of the Faculty of Science this time.

Mathematics and Computer Science at the Faculty of Science offers study programmes at the three separate departments.

**The Department of Mathematical Analysis and Applications of Mathematics (KMA)** offers prospective students three Bachelor's study programmes (Mathematics and Its Applications, Mathematics -Economics and Applied Statistics), two Master's study programmes (Mathematics and its Applications and Application of Mathematics in Economy) and two doctoral study programmes (Mathematical Analysis and Applied Mathematics). One of the most attractive study programmes in our field is the Bachelor's study programme in Mathematics-Economy with focus in Banking and Insurance. We annually enroll more than one hundred students. We have also asked the Accreditation Commission for accreditation approval of Mathematics and its Applications Master's study programme in the English language this year. We would like to open the study programme to foreign students. Both offered doctoral study programmes are also accredited in English.

One of the key research topics at the KMA is the issue of nonlinear dynamics which determinates dynamic systems, differential and difference equations and inclusions. We focus on process modeling which has practical applications in areas such as biomedicine, macroeconomics, management of renewable resources and also quantitative linguistics. We mainly deal with the study of linear regression models and statistical analysis of compositional data (specifically the percentage of data or concentration) in the field of applied statistics; however an integral representation and other fields of statistics are dealt with as well. An interdisciplinary cooperation (chemical, medical, geological and other) is also a natural part of a statistician's job. Because the laws of nature are typically formulated as partial differential equations (such as the heat equation, the equation of fluid flow or wave equation) or different minimization or maximization problems (light is refracted to minimize the time spent on its way), engaged in the preparation and analysing models of real processes and their numerical solution and various optimization methods. Finally, the Department focuses on fuzzy modeling too which provides a mathematical tool for modeling uncertain systems, allows mathematically express knowledge and data input of experts given in natural language. The activities of the research team in the theoretical field are focused especially on the development of the multi-criteria decision fuzzy methods under risk conditions and with possible use in human resources. We also involve students in the research activities quite intensely through actual work in the labs or through attending international conferences etc. It can be proven by the large representation of this department in the Dean's Award competition and also a significant interest in Erasmus study programmes abroad.

**Department of Algebra and Geometry (KAG)** currently guarantees a Discrete Mathematics study programme and two-subject pedagogical studies of Mathematics for Secondary Schools in all combinations in Bachelor's, Master's and Doctoral study programmes. The Department is internally divided by specializations of its staff into three sections, the section of Algebra, the section of Geometry, and the Didactics of Mathematics and Elementary Mathematics section.

High-quality scientific research forms an integral part of KAG activities. The Department employees publish their scientific results in renowned journals and present them regularly as participants or guests at international conferences around the world. Summary results of the Department employees' scientific activities are presented in print mainly in form of monographs.

KAG is involved in organizing a series of international conferences including the Arbeitstagung Allgemeine Algebra, Summer School on General Algebra and Ordered Sets, Quantum Structures or share of the organization of the World Federation of National Mathematics Competitions (WFNMC). Members of the department are often involved in editorial councils of national and international scientific and specialized journals.

The quality of our research is proved by obtaining grant funds provided for example by the Grant Agency of the Czech Republic, the Ministry of Youth, Sports and Education, or NATO. The research is realized in cooperation with foreign institutions and renowned Czech and foreign experts. The research focuses mainly on algebraic structures in non-classical and quantum logics, universal algebra, The Theory of Lattice and Ordered Sets, or on differential geometry.

**The Department of Computer Science (KI)** deals with education as well as research in information technologies. Computer science has a long tradition at the Faculty of more than thirty years and there has always been a high number of applicants and it is a very attractive and intriguing field of study. The fact that it is a relatively young field compared to Mathematics of Physics adds to its attractiveness. The idea that Computer Science only involves work with computers and that people studying it are IT managers who install software or create websites is a widely spread urban myth. Michal R. Fellows and Edsger Dijkstra argue that: "Computer science is no more about computers than astronomy is about telescopes, biology is about microscopes or chemistry is about beakers and test tubes. Science is not about tools, it is about how we use them and what we find out when we do." In conclusion, informatics (computer science) studies information and calculations. It uses algorithms and processes connected to gaining, representing, storing and effectively enabling access to information whether it is in bits in the PC memory or in the form of structures in human cells.

Informatics has its theoretical part which we know from mathematics as well as experimental part which we know from natural and technical sciences. At the KI we are working on especially the following areas of informatics: fuzzy logics; database; discreet data analysis; discreet mathematics; programming languages and translators; and algorithms. Most of the research is theoretically based. We examine theoretical limits, develop new algorithms, examine the complexity of problems, and develop new methods for data processing. The members of KI often attend international conferences, and they are members of editing teams of several foreign journals. KI secures teaching of Bachelor's, Master's, and Doctoral study programmes of a total of 500 students. We have been trying to maintain an excellent level of education, teach especially principles, and therefore convey knowledge that will not grow old.

Prof. Irena Rachůnková

## International Matters

### Invitation to the Open House in Contipro Group s.r.o.

Holding Contipro Ltd. cordially invites our students to the Open House which will be held on **Tuesday 29<sup>th</sup> April 2014** from 9:30 a.m. (registration at the reception starts from 9:00 a.m.). Top researchers will be waiting for you in laboratories to perform some specific experiments, to show you some of the special devices, such as electrostatic spinning apparatus 4SPIN, the Contipro flagship in nanotechnology. The Registration Department will be presented to you as well. Contipro HR Department will be prepared to consult your prospective job application at the Holding or your resume. On the day of the event you will also receive a contribution to your travel expenses at a maximum of 250 CZK and a little refreshment. Contipro will be opened until 2 p.m. The number of visitors is limited therefore to participate in the event it is necessary to register via email: [novotnyj@contipro.com](mailto:novotnyj@contipro.com). The registration is open till 25<sup>th</sup> April 2014 and will be confirmed via email. More information can be found [here](#).

### Internship in Bundestag – Lower House of the German Parliament in Berlin, Germany

The German Bundestag together with the Humboldt University, the Free University and the Technical University in Berlin is offering scholarship programmes for candidates from 28 countries including the Czech Republic to familiarize with the parliament environment in the period from 1<sup>st</sup> March to 31<sup>st</sup> July 2015. Scholarships will be open to candidates with Czech citizenship who have successfully completed Bachelor's or Master's study programs. Eligible candidates should have a very good knowledge of German language and should be younger than 30. The deadline for submitting applications is **30<sup>th</sup> June 2014**. Entries shall be sent to the German embassy in Prague electronically. Detailed information is available [here](#).

## Faculty Operation

### Deadline for concluding the Agreements to Complete a Job (DPP ) and the Agreements to Perform Work (DPČ)

These Agreements shall be concluded at the respective departments. These departments are responsible for concluding the agreement before the commencement of the validity period agreed upon including its submission to **Ivona Kristková**, HR Department, email address: [ivona.kristkova@upol.cz](mailto:ivona.kristkova@upol.cz), tel: 585634039. Agreement submitted after the deadline will be accepted only in exceptional cases and on the basis of agreement with HR department referent. DPP or DPČ for foreign employees must be submitted at least one working day before the commencement of the working period because of the employer's obligation to report foreign employees at the respective Labour Office. Please deliver the timesheets of your agreement contract employees to the HR Department always as soon as possible, not later than the last working day of the corresponding month (if the work lasts until the last working day of the month).

### Payment of the students' inland and foreign business trips

We kindly request students who do not have a contract agreement (DPP, DPČ, PS) with the Faculty of Science to use the direct support contract.

Please note that since this year there has been a change in the relevant section of the Civil Code, therefore, use the current version of the sample contract form available [here](#). The contract may be paid from individual departments' funds after modification of the contract. The contract including all the requested documents should be turned in for payment to **Kateřina Drozdová**, the Economic Department. Email address: [katerina.drozdova@upol.cz](mailto:katerina.drozdova@upol.cz), tel: 585634064.

### Completing the Inland Travel Orders for contract employees

We kindly request our employees with contract agreements (DPP / DPČ) including the possibility to go on a business trip, to complete the Inland Travel Orders electronically through the following web links: Portal / Menu Employee / Travel Orders. We ask individual department secretaries to cooperate in this matter. Travelling orders which will not be completed electronically will be accepted only in exceptional cases.

### Vacations

We kindly ask all the heads of departments and principal investigators of projects to keep track of their employees' regular vacation time, especially the leftover vacation from the previous year. **We would like to remind you that by the terminating projects and terminating employee contracts at UP it is necessary to completely use up vacation time. It is not possible to pay the unused vacation time from the project funds.** As stated by law, unused vacation cannot be given up by the employee. The unused vacation time can be paid to employees only in special cases, however, not from project funds, but the respective department funds.

### The revenues from the scripts sales of the Faculty of Science in March 2014, see [the Attachment 1/6](#), compiled by Petr Velecký, Ph.D.

## Miscellaneous

### The Young Scientists Conference

Dear colleagues, if you work with high school students, please motivate them to participate in **the Young Scientists Conference** which will be held on **30<sup>th</sup> May 2014**. Authors of the best papers will be rewarded. The Dean's Office of the Faculty of Science has released the funds for evaluation of tutors as well this year. Application forms and abstracts should be sent on email: [mkubala@prfnw.upol.cz](mailto:mkubala@prfnw.upol.cz) by **29<sup>th</sup> April 2014**.

### Leave your car at home and go to school or to work by bike in May!

We are joining the Rector's challenge to get involved in the UP Bike project campaign [Bike to Work 2014](#). Swap your car for a bicycle in May, get in shape, liven up streets of our town, enjoy the fresh air and bright rays of the morning sun...

Build your team of two to five members, register [here](#) and let the world know that the Faculty of Science can make it without a car. More on [Facebook](#).

☐ **Gift Voucher for Šiklův Mlýn 2014**

Palacký University is offering gift vouchers to the largest natural entertainment resort in the country - [Šiklův Mlýn](#). There are fun attractions for the whole family, such as a Haunted House, a Wild West Village, or riding in four-wheelers. The Resort is located in the Bohemian-Moravian Highlands about 20 km far from the highway D1, Velké Meziříčí near the village Zvole nad Pernštejnem.

The Gift Voucher includes a ticket to the entertainment resort and other interesting bonuses. The total value of the voucher is 2000 CZK. Vouchers are valid from 28<sup>th</sup> June to 31<sup>st</sup> August 2014. The only condition for activating the voucher is to bring another visitor paying the full entrance fee 180 – 220 CZK.

Vouchers are available upon prior agreement with **Dagmar Petrželová**, email: [dagmar.petrzelova@upol.cz](mailto:dagmar.petrzelova@upol.cz). If you require any further information, please call Mrs. Petrželová on 585634003.

☐ **The next Newsletter will be released on 9<sup>th</sup> May 2014**

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