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Universitatea
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„Victor Babeș”
Timișoara

E-Mediqual Summer School 2011

July 18-22

Szeged, Hungary



Modern technologies in medical education

POSDRU66/1.2/5/63815

**Event jointly organised by the Project Partners,
coordinated by the University of Szeged, Faculty of Medicine,
Department of Medical Physics and Informatics
H-6720 Szeged, Korányi fasor 9, 1st floor**



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E-Mediqual Summer School

18-22 July 2011

University of Szeged, Hungary

The University of Szeged, Faculty of Medicine is delighted to welcome colleagues, teachers from our partner universities (Timisoara, Cluj-Napoca, Targu-Mures, Iasi, Craiova and Vienna) attending to our summer school on „Modern technologies in medical education”. Our common efforts lead to a successful grant application and the E-mediqual offers a unique opportunity for regional collaboration. Although your stay with us may be brief, I trust you will explore to the fullest the rich opportunities offered to you in our intensive 5-day program.

Thank you for your coming to Szeged. Enjoy your time, be more professional and create network for the future collaboration.

Ferenc Bari

professor & chairman

Head of the summer
school



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Program

Monday 18th July

8.30 - 9.00	Registration
9.00 - 9.15	Welcome - Prof. László Vécsei Dean, Faculty of Medicine, University of Szeged
9.15 - 10.30	“Challenges of medical education” Prof. Ferenc Bari Department of Medical Physics and Informatics, University of Szeged
10.30 - 10.45	Coffee break
10.45 - 12.15	Introduction: education at my host institution (presented by the participants) I. Ana-Maria Fărr, University of Medicine and Pharmacy Targu-Mures Anca Bacarea, University of Medicine and Pharmacy Targu-Mures Cosmin Ovidiu Catu, “Victor Babeș” University of Medicine and Pharmacy Timisoara Daniel Leucuta, “Iuliu Hațieganu” University of Medicine and Pharmacy, Cluj-Napoca Diana Lungeanu, “Victor Babeș” University of Medicine and Pharmacy Timisoara Ion Mandrila, University of Medicine and Pharmacy Craiova
12.15 - 14.00	Lunch
14.00 - 15.30	Introduction: education at my host institution (presented by the participants) II. Monica Neagu, “Victor Babeș” University of Medicine and Pharmacy Timisoara Tudor Calinici, “Iuliu Hațieganu” University of Medicine and Pharmacy, Cluj-Napoca Stefana Feflea, “Victor Babeș” University of Medicine and Pharmacy Timisoara Teodora Atena Pop, “Iuliu Hațieganu” University of Medicine and Pharmacy, Cluj-Napoca Nicolae-Daniel Pirici, University of Medicine and Pharmacy Craiova Ofelia Mosteanu, “Iuliu Hațieganu” University of Medicine and Pharmacy, Cluj-Napoca
15.30 - 15.45	Coffee break
15.45 - 17.15	Introduction: education at my host institution (presented by the participants) III. Sandu Ramboiu, University of Medicine and Pharmacy Craiova Cristina Dimitriu, "Gr. T. Popa" University of Medicine and Pharmacy Iasi Elena Cojocaru, "Gr. T. Popa" University of Medicine and Pharmacy Iasi Mioara Matei, "Gr. T. Popa" University of Medicine and Pharmacy Iasi Madalina Valeanu, “Iuliu Hațieganu” University of Medicine and Pharmacy, Cluj-Napoca Diana Narita, “Victor Babeș” University of Medicine and Pharmacy Timisoara
19:00 -	Welcome party



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Tuesday 19th July

9.00 - 10.00	How to integrate biostatistics to the curriculum? Dr. Krisztina Boda, Dr. Tibor Nyári Department of Medical Physics and Informatics University of Szeged
10.00 - 10.15	Coffee break
10.15 - 12.00	Information technology tools in the practical courses of Medical Physics and Statistics Prof. Zoltán Hantos, Dr. Ferenc Peták, Dr. Tibor Asztalos Department of Medical Physics and Informatics University of Szeged
12.00 - 14.00	Lunch
14.00 – 15.30	Teaching and learning – How can modern technology help? I. Prof. Herbert Plass Medical University of Vienna
15.30 – 15.45	Coffee break
15.45 – 17.00	Teaching and learning – How can modern technology help? II. Prof. Herbert Plass Medical University of Vienna

Wednesday 20th July

9.00 - 10.30	Libraries in the 21st century – information technology for better education I. dr. Helga Hulesch, dr. Eszter Meskó University Central Library, University of Szeged
10.30 - 10.45	Coffee break
10.45 - 12.00	Libraries in the 21st century – information technology for better education II. dr. Helga Hulesch, dr. Eszter Meskó University Central Library, University of Szeged
12.00 - 14.00	Lunch
14.00 – 15.30	Digital whole-slide microscopy for pathology teaching, diagnostics, teleconsultation and quality assurance I. Dr. Tibor Krenacs 1st Department of Pathology and Experimental Cancer Research, Semmelweis University
15.30 – 15.45	Coffee break
15.45 – 17.00	Digital whole-slide microscopy for pathology teaching, diagnostics, teleconsultation and quality assurance II. Dr. Tibor Krenacs 1st Department of Pathology and Experimental Cancer Research, Semmelweis University
21.00-	Open Air Theatre (open air concert) (Dome Square)



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Thursday 21st July

9.00- 10.30	Modern imaging techniques (CT, MRI and 3D Doppler) in the medical curriculum I. Prof. András Palkó Department of Radiology, University of Szeged
10.30 – 10.45	Coffee break
10.45 – 12.00	Modern imaging techniques (CT, MR, 3D echo) in the medical curriculum II. Prof. Tamás Forster 2nd Department of Medicine and Cardiology Center, University of Szeged
12.15 - 14.00	Lunch
14.00 – 15.30	Information science and health education Dr. György Surján, National Institute for Strategic Health Research
16:00-18:30	Excursion to the Museum of Informatics
19:00-	Business dinner

Friday 22nd July

9.00- 10.30	Skill training and simulation I. Prof. Mihály Boros Institute of Surgical Research, University of Szeged
10.30 – 10.45	Coffee break
10.45 – 12.00	Skill training and simulation II. Prof. Mihály Boros Institute of Surgical Research, University of Szeged
12.15 - 14.00	Lunch
14.00 – 15.30	Molecular biology in medical training – how to position in the curriculum Prof. Zsolt Boldogkői Department of Biology, University of Szeged Benefits from molecular biology and genetic studies in the clinical work Dr. Kornélia Ágnes Szabó Department of Dermatology, University of Szeged
15.30 – 15.45	Coffee break
15.45 – 17.00	Summary and evaluation – Adjourn



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Monday 18th July

9.15 - 10.30

Challenges of medical education

Prof. Ferenc Bari

professor and chairman

Department of Medical Physics and Informatics

University of Szeged

The challenges faced by medicine today are enormous. Setting and continuously updating curricula is an ongoing task of all medical schools. Although medicine has always welcomed new technology, the actual curriculum is always fully packed with traditional (anatomy, physiology, surgery etc) subjects. Therefore it is very difficult to find appropriate slots for challenging new subjects like molecular biology, genetics and medical informatics. Besides content, length and structure of the medical education there are additional aspects which should be considered:

- too many students with very different scientific background on entrance (concerns about an impending shortage of physicians);
- to develop new methods of assessment to reflect the focus on competencies (tasks that a qualified medical professional should be able to handle successfully).
- whereas medical education has traditionally focused on diagnosis and treatment of disease, a high priority must simultaneously be placed upon education relating to maintenance of health and prevention of disease and rehabilitation
- Practical training must be made more effective
- Medicine is increasingly becoming a “team sport,” and physicians must be well-trained to work as both a member and a leader of health care teams designed to provide high quality, patient-centered care
- Given the pressures on academic faculty for both clinical and research productivity, we must identify, support, and train also our faculty

In summary we have to work a lot because medical education must respond to a multitude of challenges if it is to remain vibrant in the 21st century.



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Monday 18th July

10.45 - 12.00

Introduction: education at my host institution (presented by the participants)

Fárr Ana-Maria, MD, PhD

Department of Pathophysiology

University of Medicine and Pharmacy Targu-Mures, Romania

My name is Fárr Ana-Maria, I am lecturer at the Department of Pathophysiology from the University of Medicine and Pharmacy Targu-Mures, Romania. I am glad to go to this summer school, to find new ways to improve my experience regarding teaching in relation with research activity.

In our department teaching methodology depends on courses and practical work for the students from Medicine, Dental medicine, Pharmacy, Nurses and also Nutrition and Dietetics all in romanian, hungarian or english languages.

I am teaching at the hungarian section. Most of our courses and practical work are presented in Power Point. Our lab already have PC's for students so we can improve or teaching methods by use e-learning skills and 3D computer presentation more.

My specialty is Food Hygiene and Nutrition and my research experience is related to food additives evaluation and monitoring. I want to improve my knowledges in nutrition pathophysiology area research.

I dont have experience in distance learning methodology that's why I am eager to learn more about it and other new methods during this summer school.



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Anca Bacarea

Department of Physiopathology

University of Medicine and Pharmacy Targu-Mures, Romania

Medical education has some particularities. General paradigms concerning education and research are applicable in this field with specific issues.

Medical education has as the main subject the human being. Because of this the student is required to have a specific skill in interpersonal relationships. The communication patient – student must be very well established, so in education the main challenge is to learn the student to gain the trust of the patient and to get the necessary information to put a correct diagnostic. In order to do that we need both modern (not always very handy) and classic teaching techniques.

Knowing the duality imposed by modern principles of level 3 education the research becomes as important for an academic as is the educational process. Medical research as well has its own particularities. During the history there were multiple ethical frameworks concerning the medical research. In the context of Helsinki declaration of human rights, after the World War II the deontological framework were imposed. The paradigm of the research is adapted in medical field. As a researcher you need to respect the general principles of ethical constraints (International Comity of Harmonization in clinical trials) and the ethical considerations issued by ethical commissions. Apart from this, research means investment, and in order to have the necessary resources to sustain the research we need interdisciplinary research working groups able to gain grants and to finish them.



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Cosmin Ovidiu Catu

Department of Medical Informatics

“Victor Babes” University of Medicine and Pharmacy Timisoara Romania

As an Assistant Professor at „Victor Babes” University of Medicine and Pharmacy from Timisoara, Department of Medical Informatics, my job is to take care of the Medical Informatics labs and seminars for the students in the first year of study, i.e. to translate into practice the theoretical information taught in courses, both through practical work, and through seminars. Our syllabus includes notions of information theory, medical data collection and processing, data analysis, bio-medical signal processing and imaging, medical decision assistance systems and evaluation of its quality, as well as basics of health information systems.

For most students, these concepts are new, with a high degree of difficulty, so the primary challenge is their understanding. Perhaps, if this knowledge was taught to students in a higher year of study, it would be easier for the students to assimilate and apply it.

However, the greatest challenge lies in motivating the first year students, who still bear a high school mentality, to engage themselves in working hard for this course of medical informatics without foreseeing its importance in their future medical profession.

A different challenge is related to the aging IT infrastructure. At this moment we use outdated computer systems connected in a legacy computer network, aspects which hamper the running of the laboratory work.

Even if it is not easy, overcoming these challenges brings satisfaction to the teacher and it motivates us all to increase the efforts in improving the system.

Teaching Biophysics at the Victor Babes University of Medicine and Pharmacy Timisoara



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Daniel Leucuța

Department of Medical Informatics and Biostatistics

“Iuliu Hațieganu” University of Medicine and Pharmacy, Cluj-Napoca, Romania

“Iuliu Hațieganu” University of Medicine and Pharmacy aims to bring the best education to its students and to perform quality research. Both objectives provide challenges to the university as a whole and as well to its departments and academic staff. As an assistant professor at the Medical Informatics and Biostatistics department I teach Medical Research Methodology and Medical Informatics and Biostatistics. I am involved also in research and in collaborating with other research projects for their statistical and methodological aspects. My interest is to help students to better grasp the statistical and methodological concepts, for their future research, and medical practice, and also using the computer for this aim. For this challenge I went on the path of applicative research, and developing software helping tools. Thus I created two packages for R software environment for statistics and graphics, plugins for the R Commander graphical user interface (one for survival analysis basic functions in package survival, one for the package coin (Conditional Inference in a permutation testing framework), a web interface to help University staff/researchers access electronic library materials online from their homes, one interactive website for helping students/researchers choose the statistical method for their data analysis, one website (written in PHP, MySQL, JavaScript) for the management of an organization with multiple units (e.g. research facilities, hospitals) through using Capability Maturity Models (as those created by Software Engineering Institute of Carnegie Mellon University) to improve their management level, and as well a maturity model for implementing evidence based medicine in hospitals.



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Diana LUNGEANU

Department of Medical Informatics

“Victor Babeș” University of Medicine and Pharmacy Timisoara Romania

Project topic: *re-design the course of medical informatics and biostatistics, i.e. split the existing course into two modules taught at different stages of medical education*

Planned methods:

combining the formative and summative assessment methods: regular feed-back to the independent homework; presenting&defending the group project; sit-down comprehensive examination (problem-based)

Course of medical informatics and biostatistics in Timisoara

- At present, in our university there is a one-semester mandatory course of medical informatics and biostatistics for medical students. It should be split into two modules: (i) an introductory course on ITC skills, which would be useful at the beginning of the medical curriculum; (ii) an interactive, problem-based-learning-type course should be included during the clinical stage, when its relevance to medical professionalism could be more appropriately emphasized.
- A course of medical informatics and medical data processing should emphasize both the interdisciplinarity and the usefulness of the medical informatics and biostatistics; therefore a problem-based approach in such courses might be more effective than the traditional course format, especially when combined with a cooperative teaching (i.e. involving both MDs and “technical” faculty members).
- The two proposed modules should address two learning outcomes as they were identified by the Steering Group of the Tuning Project (<http://tuning.unideusto.org/tuningeu> Medicine): (a) effective use of information and information technology in a medical context, with all the four level 2 outcomes; (b) applying the principles, skills and knowledge of evidence-based medicine (mainly the appropriate literature search and its critical appraisal, as level 2 outcomes).
- Moreover, when designing such a course, the recommendations for programmes and courses developed by the International Medical Informatics Association (IMIA) should be considered: J. Mantas, E. Ammennwerth, G. Demiris, et al. Recommendations of the IMIA on Education in Biomedical and Health Informatics; First Revision, *Methods Inf Med* 49 (2010), 105-120.



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Monday 18th July

14.00 - 15.30

Introduction: education at my host institution (presented by the participants) II.

Monica Neagu

Teaching Biophysics

Department of Biophysics and Medical Informatics

Victor Babes University of Medicine and Pharmacy Timisoara, Romania

The aim of the presentation is to outline the methods of biophysics teaching and examination at the Victor Babes University of Medicine and Pharmacy Timisoara. In the first part of the talk the location and affiliation of the Biophysics Discipline is described, together with the academic staff involved in the educational process at different faculties of our university. Biophysics is a preclinical, one semester course taught in the form of 2 hours lecture and 2 hours laboratory per week. The main objective of the course is to explain the intimate mechanisms of biological processes, while the laboratory works build practical skills and contribute to a deeper understanding of the theoretical concepts. Students perform their laboratory works in small groups and, after completing them, they should be able to operate the equipments and to express the results of their measurements using graphical representation and the theory of experimental errors. The lectures are delivered in PowerPoint, but complex mechanisms and applications are interactively explained on the whiteboard. The students have the opportunity to print the slides and extend them during the course, since the PDF files of the slides are posted on our web page a few days in advance. The practical examination is eliminatory and includes an oral part and a multiple choice questionnaire; the obtained mark represents 25% of the final mark. The theoretical examination has a weight of 75% in the final mark and comprises a multiple choice questionnaire and an application.



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Tudor Calinici

Department of Medical Informatics and Biostatistics

“Iuliu Hațieganu” University of Medicine and Pharmacy, Cluj-Napoca, Romania

My name is Tudor Calinici and I am lecturer at the Department of Medical Informatics and Biostatistics, University of Medicine and Pharmacy “Iuliu Hațieganu” Cluj Napoca.

Since 2008 I have the academic title of Doctor, my PhD thesis title being “Information Technology and Communication Tools for Traditional and Distance Medical Learning”. I had implemented the platform for e-learning for the Department of Medical Informatics and Biostatistics, platform available at <http://odl.info.umfcluj.ro/cv/>. For this platform I developed the e-learning material specific for Biostatistics course. The platform is used by 1st year students as a complementary instrument for learning Biostatistics.

Since 2007 our University was part of European Project eVip – Electronical Virtual Patients <http://www.virtualpatients.eu/> and I had implemented the specific application for semi-linear virtual patients and branched virtual patients. The integration of virtual patient technology in curricula is one of the priorities in our University

I had implemented the solution for the management of the educational objectives for the curriculum of Faculty of Medicine in our University, application available at the url <http://curriculum.medicina.umfcluj.ro/>

I had implemented the solution for the management of the study guides for the Faculty of Medicine in our University, application available at the url <http://cv.umfcluj.ro/ghidstudiu/>



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Stefana Feflea

Education at My Host Institution

Department of Pharmacognosy

“Victor Babes” University of Medicine and Pharmacy Timisoara Romania

(Teaching Assistant at Pharmacognosy Dept., Faculty of Pharmacy and Phd. Stud. at Histology Dept., Faculty of Medicine, University of Medicine and Pharmacy ” Victor Babes” Timisoara)

The education process in medical studies has a strong intercurricular potential. The students must understand the man as a whole and learn to compose for each dysfunctionality a different puzzle made of anatomical, histological, biochemical, biophysical and psychical characteristics.

My teaching experience is related more to the pharmaceutical domain, where the same integrative approach is required to form the so called “8 stars pharmacist”. Basically, the accent is on practical analysis and preparative laboratory activities and on pharmacological information, together with some clinical experience.

Regarding the subject of Pharmacognosy, we teach the students the basic medicinal plants from a botanical, chemical and therapeutic point of view. We focus mostly on the analysis and on the correlation of the pharmaco-dynamic or ethno-pharmacologic use of the botanicals, trying to integrate the preparations that are actually found on the market as practical examples. There is the need of permanent updating with the new research findings as well as the new marketed and prescribed products, probably by connecting to databases containing this information, in order to form a competitive specialist with the reflex of permanent contact with the scientific area.

Considering that the medico- pharmaceutical student needs also to learn how to be a researcher, the integration of students during the scientific activities performed by the teachers is another important feature in the education process. We managed to involve some students that are going to prepare their diploma on the same subject, in the practical activities of our Phd research. An example of intercurricular approach where students can participate would be that of my doctoral study of natural compounds with possible implication in the angiogenesis and lymphangiogenesis processes on a simple animal model, the chick embryo chorioallantoic membrane assay.

Other didactical exercises that are being developed for better trained communicators and decision-making specialists are the role play activity and solving of clinical cases. For now we have difficulties to develop this practical stage, due to poor collaboration with the medical practitioners. Besides, another challenge in the education could be that we do not have the access to quick phyto-chemical and biological investigation indicative for better understanding of the therapeutic process.



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Teodora Atena Pop

Gastroenterology and Endoscopy Department

“Iuliu Hațieganu” University of Medicine and Pharmacy, Cluj-Napoca, Romania

My name is Teodora Atena Pop and I am a researcher at the Gastroenterology and Endoscopy Department, University of Medicine and Pharmacy “Iuliu Hatieganu” Cluj Napoca. Also I am a PhD student with the thesis: Hepatocellular carcinoma – role of stem cells.

Since 2009 I am part of the team of an European project regarding the development of the PhD School in our university, project site available at <http://www.scolidoctorale.netlogiq.com/>. Also, I have been part of the team who had implemented the specific application for guiding and monitoring the PhD students. The integration of this monitoring system in the PhDs students curricula is one of the priorities in our University.

Since 2011 I have been involved in the European project E-Medical, project regarding the improvement of the curricula of the Romanian Medical Faculties.



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Nicolae-Daniel Pirici

E-learning in the Department of Histology

Department of Histology

University of Medicine and Pharmacy Craiova, Romania

Although in the very beginning, we are making the first steps in introducing virtual histology in our practical assignment histology classes. In this short introduction we will present our current experience in this field, with its advantages and draw-backs.

Ofelia Mosteanu

Gastroenterology and Endoscopy Department

“Iuliu Hațieganu” University of Medicine and Pharmacy, Cluj-Napoca, Romania

My name is Ofelia Mosteanu and I am a researcher at the Gastroenterology and Endoscopy Department, University of Medicine and Pharmacy “Iuliu Hatieganu” Cluj Napoca. Also I am a PhD student with the thesis: Fatty liver and cholesterol gallstones.

Since 2009 I have been involved in an European project regarding the development of the PhD School in our university, project site available at <http://www.scolidoctorale.netlogiq.com/>. I have been part of the team who had implemented the specific application for guiding and monitoring the PhD students. The integration of this monitoring system in the PhDs students curricula is one of the priorities in our University.



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Universitatea
de Medicină și Farmacie
„Victor Babeș”
Timișoara

Monday 18th July

15.45 - 17.15

Introduction: education at my host institution (presented by the participants) III.

Sandu Ramboiu

Education at UMF Craiova

University of Medicine and Pharmacy Craiova, Romania

The University of Medicine and Pharmacy Craiova represents the main medical academic institution in the south-west of Romania. Here the educational component is predominant, but the scientific research is beginning to gain dimensions and substances, therefore exists a strong certainty of balance between the two components on an average term.

Our mission is:

- to assure for our students a basic academic training in medical and pharmaceutical sciences, at current level of knowledge and according to national needs, through courses and internships;
- to promote and support biomedical research as a major activity of the institution and to encourage students involvement in the various research areas(gastroenterology, surgery, molecular biology, genetics, medical informatics);
- an interactive generation, supported by educational activity, of clinical and research acquisitions in the life sciences, thus contributing to the enrichment of knowledge assets;
- to ensure continuous training of medical and pharmaceutical specialists, through postgraduate courses;
- to improve the academic environment and to ensure an appropriate climate for harmonious development of students who have chosen our institution as a basis for professional training;
- to support national and international mobility of lecturers and students.

As a lecturer at the Department of General Surgery I am interested for our students to achieve the necessary knowledge and skills to establish the diagnostic and the treatment of the surgical diseases in general medicine practice. They has to capitalize their own potential in scientific activities and to manifest a positive and responsible attitude towards surgical patient care.



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Our Group is represented by Gr.T.Popa,, Iasi
"Gr. T. Popa" University of Medicine and Pharmacy Iasi

CRISTINA DIMITRIU

Biochemistry Department, Faculty of Medicine, University of Pharmacy and Medicine

CRISTINA DIMITRIU is a lecturer in Biochemistry Department, Faculty of Medicine, University of Pharmacy and Medicine „Gr.T.Popa,, Iasi with 13 years experience in this field and experiences in experimental biochemistry, clinical and molecular biology, understanding and applying techniques for wet and dry chemicals, chemiluminescence, PCR, ELISA. She is also collaborator of Clinical Biochemistry and Immunology Laboratory of Cuza Voda Maternity Iasi.

ELENA COJOCARU

Histology Department, Faculty of Medicine, University of Pharmacy and Medicine

ELENA COJOCARU is assistant professor in Histology Department, Faculty of Medicine, University of Pharmacy and Medicine „Gr.T.Popa,, Iasi, with 9 years experience in this field. She is also working as specialist in Pathology, Pathology Department, Emergency Hospital for Children St. Mary, Iasi. Technical skills and competences: conventional histopathology and special techniques learned during residency and practice every day; diagnosis in child pathology.

MIOARA MATEI

Primary Health Care and Epidemiology Department

MIOARA MATEI is assistant professor in Primary Health Care and Epidemiology Department with 8 years experience in this field (2004 - 2011). She also presented her PhD thesis on 25 May 2011: “Epidemiological study in the population from the North-East Area of Romania regarding the influence of genetic susceptibility and environmental factors in ovarian cancer.” Other interests were to participate at the validation and completion of the assessment questionnaire of risk factors in gynaecologic cancers in studied population; develop the study databases, participate to the statistical analysis and epidemiological interpretation of the research findings; initiate in the DNA extraction from peripheral blood, DNA amplification through PCR and RFLP analysis of CYP1A1 and p53 gene’s polymorphism.



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Our duties in university include two directions: education and research.

Roles in education:

- running of tutorials, seminars and laboratory;
- facilitation of tutorial discussions;
- advising students on academic matters;
- grading homework or exams; administering tests or exams;
- assisting professor with a large lecture class by teaching students;
- participate in preparing the materials for scientific presentation at congresses, conferences and for publishing;
- participate at scientific manifestations in our field;
- attendance at departmental and faculty meetings;
- work and interact with people of different cultural and religious backgrounds, different gender, and diverse political views, while maintaining impartiality and objectivity;

Research:

- participate at the research design elaboration and study subjects selection;
- manage relationships with key stakeholders involved in projects;
- collaboration with people from other departments - working as a member in some multidisciplinary research teams;
- participate to the preparing for materials acquisition;
- develop the study databases, participate to the statistical analysis and epidemiological interpretation of the research findings;
- identify appropriate sources of external research grants;
- participate to the preparing grants application;
- preparing the materials for scientific presentation at congresses, conferences and for publishing in appropriate journals.



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Mădălina Văleanu

Department of Medical Informatics and Biostatistics

“Iuliu Hațieganu” University of Medicine and Pharmacy, Cluj-Napoca, Romania

I graduate Computer Science High school in Cluj-Napoca. After that I graduate the Computer Science Faculty from Babes-Bolyai University from Cluj-Napoca. I continued with a master degree in distributed informatics (UBB), another one in medical informatics (UMF) and with PhD in computer science (UBB). After I finished the university, I work for 6 years for a big software company, and starting from 2001 I am working in Medical Informatics and Biostatistics Department from UMF. At the University, I am working with students from dentistry, general medicine, nursing and other. I am the professor for the dentistry students in the first year of study. I am trying to keep my students interested for statistics (even if is very difficult sometimes, because they always sad “we don’t know any math and we don’t like it”). The courses are PowerPoint presentations, and I think that are clear. They can find all the courses and practical activities on the web site and they can practice and learn from any other computer. They can send me questions and I am answering. We have an hour fixed in a day/week with consultation, when students can come and ask anything about our courses.

In the research part, I am interested in databases (my PhD domain), medical databases and, of course, for any medical study that need a statistical part.



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Universitatea
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Diana Narita

Teaching Biochemistry at the Victor Babes University of Medicine and Pharmacy Timisoara

Department of Biochemistry

“Victor Babes” University of Medicine and Pharmacy Timisoara Romania

The aim of the presentation is to outline the methods of teaching biochemistry at the Victor Babes University of Medicine and Pharmacy Timisoara. Biochemistry is a preclinical, three semester course, with 2 hours lecture and 2 hours laboratory works per week.

The main objective of the course is to explain the intimate mechanisms of biochemical processes, respectively the modality through which, at molecular level, the cell receives, processes and responds at all internal and external stimuli. The lecture makes connections with the alterations of the normal biochemical pathways and associated pathologies. An important part of the lecture is dedicated to the clinical biochemistry and specifically, to the investigation and diagnosis of the diseases and also to the molecular methods used for nucleic acids manipulation. The lectures are delivered in PowerPoint, but complex mechanisms are interactively explained on the whiteboard. There is a concern for a continuous interrelation with the students by questions regarding the presented notions.

The laboratory works build practical skills and knowledge of modern methods used in the clinical laboratory. They contribute also to a deeper understanding of the theoretical concepts presented at the lectures. Students perform their laboratory works either individual or in small groups and, after completing them, they should be able to operate the equipments and to interpret and discuss the results of their measurements in the context of clinical significance. The practical examination is eliminatory and includes an oral part and a practical execution of an experiment, while the theoretical examination includes a written examination with five subjects and is critical for the final mark.



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Universitatea
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Timișoara

Tuesday 19th July

9.00 - 09.30

How to integrate biostatistics to the curriculum?

Krisztina Boda, Tibor Nyári

Department of Medical Physics and Informatics

University of Szeged

Teaching biostatistics to medical students is an important subject in their first year of study. From the year 2010/2011 biostatistics is taught by the staff of our Department as a part of the subject „Medical Physics and Statistics”. Earlier biostatistics was taught as a part of the subject „Biophysics”: students studied biostatistics during two months, and the biostatistical module finished by a written test.

The main change in teaching biostatistics is that teaching physics and teaching biostatistics goes parallel with two hours per week physics lecture and one hour per week biostatistics lecture. The topics could be slightly expanded teaching period increased from two months to one semester. As a practice, there is a recommended elective course „Biostatistical calculations”. During these practical, examples of medical use of biostatistics are demonstrated and problems are solved mainly by a dedicated computer program (SPSS). Simple formulas and problems are solved manually; their result is checked by computer. The main task is the choice of the appropriate method and the interpretation of results. Data bases arise mainly from the physics laboratory practical and from medical research. The exam consists also from two parts, failing biostatistics means failing the whole subject and vice versa.

The experiences of the first year are positive: the knowledge of the students was found to be satisfactory, and students had a favourable opinion about biostatistics. We hope that using this method of teaching, biostatistical knowledge of the students will be deeper and they will use it successfully during their study or later in their usual life.



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Tuesday 19th July

9.35 - 10.00 and 10.15 - 12.00

**Information technology tools in the practical courses of Medical Physics and
Statistics**

Prof. Zoltán Hantos, Dr. Ferenc Peták, Dr. Tibor Asztalos

Department of Medical Physics and Informatics

University of Szeged

The topics of the laboratory practicals of Medical Physics and Statistics have been revised to include, in addition to some key biophysical measurements, a group of computer-assisted noninvasive measurements of human physiology. The revision was primarily aimed at providing more insight for the medical students into the functions of the intelligent signal acquisition and processing techniques embedded in most diagnostic systems of the medical practice. Additionally, all associated activities, such as data organization, preparation and submission of reports, mid- and end-term exams, etc. have been given support by tools of information technology (IT). The areas covered by the physiology measurements are (a) mechanical and electrical correlates of the skeletal muscle activity (electromyography), (b) electrocardiology, (c) blood pressure measurement: auscultation and oscillometry, (d) spirometry and (e) electrodermal activity.

The IT tools include (1) the Biopac® Student Lab System designed for non-invasive measurements of physiological signals and their evaluation, (2) an Excel based measurement protocol assisting in the process and evaluation of the measurements, (3) Java applets employed in the interactive presentation of some physical phenomena and (4) the SPSS® software package supporting the education in statistics. Excel is used for practicing CT reconstruction and measurement principles and also in the electronic exam. In order to link the knowledge in physics and statistics, the measurement results collected in the practicals are used as raw data for statistical analysis.



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Tuesday 19th July

14.00 – 15.30 and 15.45 – 17.00

Teaching and Learning - How can modern technology help?

Prof. Herbert Plass

Medical University of Vienna

The way students learn has changed during the last years. A multimedia environment dominates and changed (and still changes) the behavior of the so called "Generation Y". Students no longer learn in a linear way but they want to collect information at any time and at any place. The way students acquire knowledge closely resembles a mind-map. Thus teaching has to be adapted, new strategies and methods are needed.

A "guest lecturer" will demonstrate his abilities (movie). The workshop participants are then requested to reflect on this lecture. The outcome will be documented in form of a mind-map.

The desire to collect information "at any time and at any place" could be met with an on-line learning platform. An outline for an on-line course will be developed by the participants. On-line courses used at the Medical University of Vienna will be shown and discussed.

Of course, in-class activities still are not out-of-date, but they should evolve from a simple lecture to more structured methods. What makes a lecture boring and what are the possibilities to hold the students' attention. Some possibilities to do so are discussed and elaborated in the course of the workshop. Participants also will experience the learning strategy "Team Based Learning" which is highly accepted by the students in Vienna.

Is the use of an audience response system helpful in teaching? Participants will find out since such a system will be in use throughout the workshop.

At the end of the workshop there will be opportunity for an open discussion.



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Wednesday 20th July

9.00 - 10.30 and 10.45 - 12.00

Libraries in the 21st century – information technology for better education

dr. Helga Hulesch, dr. Eszter Meskó

University Central Library

University of Szeged

The University of Szeged has 12 faculties. The University Library of the University of Szeged (UL) supports the changing needs of teaching, learning and research of ten of these faculties.

The UL is a 21st century library regarding its building, facilities, services and information resources. This will be presented briefly for the participants by a short tour around the building and an introduction to the electronic services.

In the digital era information retrieval is a great challenge. University libraries have to introduce students and researchers to the elements of information literacy. They should understand the nature and purpose of scientific literature and be able to use library tools and services to obtain the data they need. We show the ways how our library participates in this process.

Finally we will discuss the course plan of the PhD course „Online information retrieval” in detail. We plan to involve participants as „students” in a course project.



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Timișoara

Wednesday 20th July

14.00 – 15.30 and 15.45 – 17.00

**Digital whole-slide microscopy for pathology teaching, diagnostics,
teleconsultation and quality assurance**

Dr. Tibor Krenacs

1st Department of Pathology and Experimental Cancer Research

Semmelweis University, Budapest

Histopathologists play key roles both in diagnosing disease entities and determining biomarkers related to the prognosis and response to specific therapy of malignant tumors. Histopathology is still firmly based on cell and tissue morphology supplemented with *in situ* molecular information and these together can be studied through the optical microscope. Digital microscopy creates the digital representation of the whole microscopic slides at decent quality, which can be dynamically viewed, navigated and magnified through the computer monitor as driven with the mouse, and shared through computer networks without spatial and temporal limitations. Digital slides can be integrated into existing hospital databases and accessed through intranet or the Internet for teaching, primary diagnosis, teleconsultation and quality assurance. Besides pathology, digital microscopy has become popular in other morphology disciplines particularly for teaching histology within the Anatomy curriculum. In teaching, all students view the best selection of the very same slides either in class or from home, without owning a microscope. We, at the 1st Department of Pathology and Experimental Cancer Research, Semmelweis University, Budapest, have been exclusively using digital slides for histopathology teaching since September 2007 in a 40-computer facility, with great success. Our freely accessible remote slide-box (www.pathonet.com) of over 200 digital slides of the histopathology curriculum generated > 100,000 page loads in 2009.

During the Szeged course, the advantages of digital microscopy particularly in pathology will be summarized and some useful features demonstrated in practice by using the networked multicomputer teaching facility.



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Thursday 21st July

9.00- 10.30

**Modern imaging techniques (CT, MRI and 3D Doppler) in the medical
curriculum I.**

Prof. András Palkó

Department of Radiology

University of Szeged

Imaging is one of the most rapidly developing areas of medical activities; therefore its training has to provide up-to-date, if not visionary information to the students. This is, on the one hand, one of the major challenges of undergraduate education; on the other hand, a great opportunity to inspire the attention and interaction of medical student, especially of those who have a special attraction to technical and computer sciences.

The new trends and technical development in medical imaging are opening up avenues in many directions. While the list of available modalities have not changed significantly, still containing conventional radiography, ultrasound, computed tomography, magnetic resonance imaging, nuclear medicine (plus hybrid imaging) and interventional diagnostic (but also therapeutic) procedures; the portfolio of information achievable by them has been extended by the appearance of molecular and functional imaging, computer assisted detection and diagnosis, associated with easier operation and interpretation. Another important feature and probably a future perspective of radiology is its sub-specialization and closer than ever cooperation with special clinical fields, changing the paradigm of training students in “general radiology”.

In order to keep pace with these accomplishments our training activities have to be adapted to meet the needs of future clinicians being responsible for finding the appropriate, cost- and risk-efficient diagnostic algorithm for each of their patient in an environment where personalized medicine and theranostics are becoming more and more frequently the rule and not the exception.



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Thursday 21st July

10.45 – 12.00

Modern imaging techniques (CT, MR, 3D echo) in the medical curriculum II.

Prof. Tamás Forster

2nd Department of Medicine and Cardiology Center

Albert Szent-Györgyi Medical Center

University of Szeged

Even in the 21st century, physical examination is still forming the basis of patients' inspection. Making the correct diagnosis in cardiology, other techniques are also necessary. Traditional methods, such as ECG, X-ray and conventional echocardiography (M-mode, 2-dimensional and Doppler) are regularly used.

Transoesophageal and stress echocardiography are coming closer to daily routine practise but are not widely used at the moment. Nowadays, ultrasound technology provides newer approaches to cardiology and vascular imaging. Three-dimensional echocardiography allows more exact calculation of heart volumes, ejection fraction and LV mass. Certain heart structures can be imaged more precisely. A completely new technique is the 3-dimensional speckle-tracking which can reveal contraction properties of the myocardium. Tissue Doppler imaging, strain and strain rate imaging give better insight into myocardial function. Coronary wall structure can be visualized by intravascular (intracoronary) ultrasound (IVUS). Function of the coronary arteries usually investigated by fractional flow reserve (FFR), imaging of myocardial resistance (IMR) or coronary flow reserve (CFR).

MDCT studies allow 3-dimensional reconstruction of the coronary tree, calculating total calcium score and picture heart anatomy in high quality.

Cardiac MR has several advantages as compared to echocardiography and MDCT. Besides excellent image quality we can get functional information (myocardial function and flows) about the heart.

These new technologies can contribute to the better understanding of cardiovascular anatomy and function and all these methodologies should be a part of medical curriculum.



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Thursday 21st July

14.00 – 15.30

Information science and health education

Dr. György Surján

National Institute for Strategic Health Research

The presentation highlights the ways in which informatics can contribute to medical / health education. Beyond the various technical support, informatics can offer new insights into handle (represent, organise, process and teach) medical knowledge. It will be demonstrated through simple examples how knowledge representation (a subfield of informatics) affect the ease of interpretation and problem solving. Taking advantage from using computers requires formal, axiomatic representation of medical knowledge. Traditionally, medicine is considered as a non-axiomatic, narrative and empirical field. However medical descriptions and definitions can and should be revised in the light of formal logic. Modern medicine requires evidence based statements, precise definitions that finally will lead to a highly complex but formally tractable knowledge system. Modern medical education should more and more rely upon the power of computers in dealing with such highly complex systems.



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Universitatea
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Timișoara

Friday 22nd July

9.00- 15.30

Skill training and simulation I.

Prof. Mihály Boros

(Institute of Surgical Research, University of Szeged)

Friday 22nd July

14.00 – 15.30

Molecular biology in medical training – how to position in the curriculum

Prof. Zsolt Boldogkői

Department of Biology, University of Szeged

Benefits from molecular biology and genetic studies in the clinical work

Dr. Kornélia Szabó

Department of Dermatology, University of Szeged

The three major tasks of the Department of Dermatology and Allergology are patient care, teaching and research, all of which are in very close association with each other. At the Department our research group is interested in studying the genetic predisposing and protective factors of various common multifactorial skin diseases and their exact molecular pathogenesis.

In this talk I would like to show an example how genetic and molecular biology studies help the better understanding of one of the most common skin disease, acne vulgaris, how the gathered information help in the everyday clinical work, and in what ways these studies aid the education of future physicians and biologists.



Dear Guests, we invite you to a Classical Music Program

on the 20th (Wednesday) of July at the Dóm Square at 21.00

The Symphony Orchestra from Szeged will play.

*It is an **open air** concert.*

Program:

Ferenc Liszt: Orfeusz-szimfonikus költemény (*Orpheus*)

Ferenc Liszt: II. magyar rapszódia (*Hungarian rhapsody no. 2*)

Ferenc Liszt: Les Préludes-szimfonikus költemény (*Les Preludes*)

break

Smetana: Moldva-szimfonikus költemény (*The Moldau*)

Borodin: Poloveci táncok-balettzene (*Polovtsian Dance*)

Dvorák: Szláv táncok (*Slavonic Dance*)

Conductor:

Sándor Gyüdi

Collection of Informatics Relics at Szeged



During the mid-seventies of the past century, the John Neumann Computer-Science Society (JNCSS) initiated, in Hungary, the collection of various objects of computational technology and written documents. The objective was the creation of a museum, which preserves and exhibits the international and national appearances and applications of object and written memories of this technological development.

At the end of 2009, the collection is estimated to be of 220 metric tons, consisting of about 12 000 pieces. The electronically counted number of visitors exceeded 4000. According to some experts the Museum will present a collection which is unique in Europe.



This booklet is based on material submitted by the participants and speakers. The text has not been modified

Edited by Erzsébet Forczek (Department of Medical Physics and Informatics) with technical assistance by Magdolna Laurinyecz (Department of Medical Physics and Informatics).