

The Amsterdam International Medical Summer School
20th edition

Bridging health care with IT

Date July 5 – 17, 2009



The Amsterdam International Medical Summer School 20th edition

Welcome,

The Amsterdam International Medical Summer School (**AIMSS**) is an annual event, organized by the Academic Medical Center University of Amsterdam (AMC-UvA) in cooperation with the Amsterdam Maastricht Summer University, for advanced students and recent graduates in Medicine, Biology and Health Sciences with knowledge of biomedical and clinical sciences. The AIMSS offers you the opportunity to live and study in international surroundings and to meet students from all over the world.

This year the AIMSS will organize the Summer School **Bridging health care with IT.**

The Summer School will take place from July 5 until July 17, 2009 in the AMC, Amsterdam.

The course of this Summer School consists of hands-on training combined with lectures on selected subjects concerning the topics in health informatics:

- Bio-informatics
- Imaging and radiology tools
- Computerized patient records
- Medical terminology systems
- Decision making in medicine and support tools
- Strategic information management in hospitals
- Epidemiology

by internationally known experts of the AMC-UvA and other centers in The Netherlands.

The course of this Summer School offers an inviting combination of basic concepts, supported by lectures, hands-on activities and visits

In addition to the academic program many other activities will be organized. You can enjoy a lively social and cultural program in and outside Amsterdam.

We hope to welcome students from all over the world in Amsterdam as a participant in our Summer School 2009.

We will do our best to make your stay both useful and enjoyable.

Professor L.J. Gunning-Schepers, MSc, PhD
Dean

Members of the Program Committee
Chair: Associate Professor Monique Jaspers, PhD
(Clinical Informatics)
Professor Arie Hasman, PhD
(Clinical Informatics)
Professor Antoine van Kampen, PhD
(Bioinformatics Laboratory)
Ina ten Have
(International Office)



The Amsterdam International Medical Summer School

Scientific program

Overview Health and ICT, Patient records and Databases

The lectures concerning this topic will start with a definition of the field of medical informatics. Then the concepts data, information and knowledge are explained. Medical informatics studies three types of processes: disease processes, clinical reasoning processes and organizational processes. These processes are introduced. Then hospital information systems and their architecture are introduced. Patient safety and the way it can be enhanced by decision support systems are explained. The lecture also provides an overview of new technological developments, among which the electronic patient record. Three different structures of patient records and the differences between paper and electronic medical records are explained. Finally some examples of hospital statistics that can be based on the information in patient record will be presented. After the break we will focus on databases. What are databases are there different types of databases and if so why, where do you need databases for and how do they differ from ordinary files? Also some time will be devoted to the question of how to structure a database.

Medical Terminological Systems

A major challenge these days is to move electronic patient records from second-generation systems to third-generation systems. The prerequisite of third-generation systems is being concept-oriented, enabling for example more complex decision support. This can be fulfilled by properly applying contemporary terminological systems. A medical terminological system provides a means for structuring medical knowledge. It generally represents concepts, their interrelations and the terms describing them. Examples of well-known systems are ICD-9CM (International Classification of Diseases), and DSM-IV (Diagnostic and Statistical Manual of Mental Disorders). An example of an emerging terminological system is SNOMED CT (Systematized Nomenclature of Medicine - Clinical Terms), a comprehensive concept-based system. The use of systems such as SNOMED CT is two-fold. First they provide a means for moving from classification (basically generalizing patient information) to standardized registration of (patient) information (i.e., capturing any required detail regarding the patient). Second, they make possible multiple use of data (e.g., for patient care, decision support, and health care evaluation) by the aggregation of patient

information using various levels of detail the concepts from a system may represent. With the increased use of computers, medical terminological systems have become increasingly large and elaborately structured.

The lecture will give an overview of various types of medical terminological systems, their characteristics and ways of identifying their strengths and weaknesses. Various types of usage (in clinical practice as well as in health care evaluation) will be discussed and some systems will be demonstrated

Clinical Epidemiology

This part of the programme includes an introduction to clinical epidemiology. It focuses on topics like measuring disease occurrence, the advantages and disadvantages of different study designs, risk analysis, bias and confounding as well as on survival analysis using Kaplan Meier and Cox-regression analysis. Lectures alternate with hands-on-sessions so that participants can immediately bring their newly gained knowledge into practice.

Bioinformatics and Medical Informatics

For more than a century vast progress has been made in genetics and molecular biology. During the last decade new high-throughput experimental techniques have rapidly emerged with led to the new scientific discipline of 'genomics'. For example, the automation of DNA sequencing has set the stage for the Human Genome Project in 1990, which finally resulted in the publication of the complete human DNA sequence in 2001. Genomics has greatly accelerated fundamental research in molecular biology as it enables the measurement of cellular molecular processes on a global scale that, for example, led to new approaches for molecular diagnostics and drug development. One major challenge is the conversion of the large amounts of complex genomics data into biological knowledge. Bioinformatics (BI) is the scientific discipline that approaches this challenge through the development and applications of methods from informatics and mathematics. Medical informatics (MI) and bioinformatics are converging and sometimes even merging in the new discipline of biomedical informatics.

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Scientific program

The identification of opportunities for collaboration between these disciplines to support clinical genomics requires a good understanding of both disciplines:

- How do BI and MI compare and contrast in daily practice?
- What are the types of applications in health care that may benefit from collaboration of these two disciplines?
- What types of technologies are used by these disciplines and how could BI and MI mutually benefit from each other's expertise and strengths?
- How do (new) concepts and paradigms such as e-Science, GRID, Wiki and open-source software affect BI and MI?

By answering these questions the new generation of bioinformatics and medical informatics researchers will be better able to address and support the complex scientific questions that emerge in nowadays clinical genomics.

Medical Decision Support Systems

A medical decision support system is a computer program that provides reminders, advice or interpretation specific to a given patient at a particular time. Research on decision support systems in medicine started in the 1960s; throughout the years, the emphasis has shifted from diagnosis to reminder systems and guideline implementation.

Various studies have shown that electronic decision support systems can help doctors to make better decisions, in terms of both process and patient outcomes. But to be effective, a decision support system must be well integrated into clinical workflow processes.

The lecture will cover an historical overview of decision support systems in medicine, different forms of decision support, current trends, and studies of their effectiveness. Various decision support systems will be demonstrated.

Medical Image Processing tools

The information in images produced by modalities as X-ray, CT and MRI at the Radiology department is crucial in the patient diagnosis process. The digital data itself, however, as produced by these modalities is not always fit to directly use this information: image processing tools may be necessary to transform the raw image data into information suitable for the interpretation by the radiologist or for e.g. an automatic pattern recognition application. In this course we will

present the principles of image acquisition at the radiology department, discuss the information contents of digital images and give a brief overview of the basic image processing tools necessary to enable information extraction

Strategic Information Management in Hospitals

Nearly all people in a hospital have an enormous demand for information which has to be fulfilled in order to achieve high quality and efficient patient care. Besides the health care professionals, hospital management needs up-to-date information about the hospital's costs and services.

Hospital information systems are, therefore, an important quality and cost factor. Today information belongs to the most important productivity factors of a hospital. For high-quality patient care and economic management of a hospital, it is essential that the hospital information system can make information fully available on time. This is also important for the competitiveness of hospitals. Information processing in hospitals should offer a holistic view of the patient and of the hospital. A hospital information system can be regarded as the nervous system of a hospital. The integrated and systematic processing of information is important because all groups and people and all areas in the hospital depend on its quality, the amount of information processing is considerable, and healthcare professionals frequently work with the same data. During the course on strategic information management in hospitals we will discuss hospital information systems and their systematic management.

The Amsterdam International Medical Summer School

General information

Course profile

The duration of the course is two weeks from July 5 – July 17, 2009.
Seminars and workshops are given from Monday to Friday.
Introduction and registration on Sunday afternoon July 5, 2009.
The course will include lectures as well as visits and hands-on activities. During the course the participants will get assignments.
At the end of the course a certificate will be issued to those participants who have completed the course and have fulfilled their assignments / presentations.

Applicant profile

The participant should be an advanced student in e.g. Medicine, Biology or Health Sciences, with knowledge of biomedical and clinical sciences, recent graduates can also apply.
Number of participants: 30 students.

Course language

The course language will be English.

Venue

The course will take place in the AMC, Meibergdreef 15, 1105 AZ Amsterdam, The Netherlands.
The AMC can be reached in 25 minutes from Central Station Amsterdam by subway, direction Gein, stop Holendrecht.

Course fee & payment conditions

The course fee does not cover the accommodation and expenses for meals.

Course fee:

Payments received till:

Before June 1, 2009 € 430,--

After June 1, 2009 € 530,--

Accommodation fee:

shared room (including bed linen): € 275,00.

The course fee should be paid in EURO:

to: ABN AMRO Amsterdam the Netherlands

Account number 446546844

BIC: ABNANL2A

IBAN:NL65ABNA0446546844

on behalf of:

Amsterdam Maastricht Summer University

P.O. Box 53066

1007 RB Amsterdam,

The Netherlands

Please make sure your name, the name "the Amsterdam International Medical Summer School" and the course code **Medic-2** is mentioned on your payment.

The course fee contains:

Admission to all lectures, course materials, public transport pass in Amsterdam, welcome drink and meal, canal tour, concert, visit to a museum and other social and cultural activities, closing buffet.

Accommodation

The accommodation consists of modest student apartments (shared) with shared bathroom and kitchen. The apartments are situated in the city center of Amsterdam, near by several places of interest.

The accommodation arrangements are available for participants only and cover the period July 3 – 19, 2009, 10.00 a.m.

Cost of living

Student restaurants as well as the AMC-restaurant offer meals at reduced prices. This will amount to approximately € 125, -- per week.

Most economical is to prepare your own meals.

Insurance

Please make sure your insurance (medical and travel insurance etc.) is valid during your stay in the Netherlands.

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General information

Application and registration

Please return the application form including:
Curriculum Vitae , a letter of motivation, a letter of recommendation by the home institution and 1 photograph (necessary for your public transport pass) to:

The Amsterdam Maastricht Summer University
P.O. Box 53066
1007 RB AMSTERDAM

The Netherlands

Telephone: + 31.20.6200225

Telefax: +31.20.6249368

<http://www.amsu.edu>

For further information & correspondence:

Please contact the address stated above.

Deadline

Applications and payments should be received in Amsterdam before June 1, 2009.

Applications arriving after June 1, 2009 will be treated in the order in which they are received.

Cancellation

Before June 1, 2009.

Conditions

Priority will be given to completed applications (including payment in full) in the order in which the payments are received.

Written cancellations received before June 1, 2009 will be refunded after 15% of the total has been deducted for administrative expenses.

No refunds will be made for cancellations received after June 1, 2009 or for non-attendance. Course materials will be forwarded in any case.

The Academic Medical Center University of Amsterdam reserves the right to cancel a course due to unforeseen circumstances without any liability for damages arising, such as flight tickets etc. In that case the participation sum, if already paid, will be refunded in full.

All participants in the courses are bound by the standard conditions of the Amsterdam Maastricht Summer University (www.amsu.edu).

