



### General Information

The meeting will take place at the Faculty of Health Sciences (FOHS), Ben-Gurion University of the Negev, Beer-Sheva.

For further information and registration please contact:

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Ben-Gurion University of the Negev

International Conference on:

# Ergonomics in Emergency Care, Operating Rooms and Intensive Care Units

**February 23-24, 2005**

Joyce Goldman Auditorium  
Faculty of Health Sciences  
Beer-Sheva, Israel

**A Joint Meeting of:**

- The European Society for Computing and Technology in Anesthesia and Intensive Care (ESCTAIC)
- Faculty of Health Sciences, BGU
- Dept. of Industrial Engineering and Management, Faculty of Engineering Sciences, BGU
- Division of Anesthesiology, BGU - Soroka Medical Center

**Coordinators :**     **Gabriel M. Gurman, MD**  
Faculty of Health Sciences, BGU

**Yael Edan, Ph.D.**  
Dept. of Industrial Engineering &  
Management, BGU

**Administration:**   **Ronit Temes, M.A.**  
Public Relations Office,  
Faculty of Health Sciences

The conference organizers are indebted to Johnson and Johnson and Storz Companies for their generous contribution to the success of this unique event.

## *Dear Participants,*

It is our pleasure to welcome you all, guest speakers and audience, to this rather unusual scientific event which brings together physicians, physicists, engineers and researchers of Ergonomics and new technologies in the field of acute care.

Ben-Gurion University of the Negev is proud to have organized a two-day scientific program which includes lectures to be delivered by a variety of experts in a multitude of scientific fields, whose only common denominator is their deep-rooted interest in developing new tools, devices and concepts.

We hope that at the conclusion of two intensive days exchanging ideas and interactions in the various scientific fields, we will all be a little bit closer to achieving practical applications of our research work.

We warmly welcome the representatives and officers of the European Society for Computing and Technology in Anesthesia and Intensive Care (ESCTAIC), who decided to hold their traditional workshop in Beer-Sheva, the city of Abraham, the capital of Negev, so green in these winter days.

It is our hope that this ergonomics conference will facilitate joint research projects in the technology of acute care, which eventually could serve patients in need of care for acute conditions, whether in the emergency department, the operating theater or the intensive care units.

Last but not least, we would like to thank all our sponsors who have identified with the importance of our goals and have greatly contributed to our efforts to bring together so many qualified researchers and participants to this special event.

*Gabriel M. Gurman, M.D*

*Yael Edan, Ph.D*

Conference Coordinators

# Scientific Program

## Day 1 - February 23

08:45-09:00 Registration

09:00-09:30 **Opening: Remarks**  
Prof. Jimmy Weinblatt, Rector - BGU  
Prof. Wolfgang Friesdorf - ESCTAIC

09:30-10:30 **Session 1**  
**Defining the Clinical Requirements**

**Chair: Prof. Yoram Shapira -**  
Beer Sheva

**For the Operating Unit**  
Thomas Heil - Germany

**For the Intensive Care Unit**  
Wolfgang Koller - Innsbruck

10:30-11:30 **Session 2**  
**Methodological Attempts**

**Chair: Prof. Joachim Meyer - BGU**

**System Ergonomics**  
Wolfgang Friesdorf - Berlin

**Process Analysis**  
Ingo Marsolek - Berlin

**Usability Evaluation**  
Wolfgang Friesdorf, Ingo Marsolek -  
Berlin

11:30-11:45 Coffee Break

11:45-12:45 **Session 3**  
**Practical Results**

**Chair: Prof. Joseph Pliskin - BGU**

**Data Integration**  
Vincenzo Lanza - Palermo

**Decision Support at the Point of**  
**Care**  
Azriel Perel - Tel Hashomer

**OR1- Integrated Work Places**  
Kathrin Jung - Storz Comp.



# Scientific Program

12:45-14:30 Lunch

14:30-15:45 **Session 4**

**Emergency Design and Operation**

**Chair: Dr. Lngo Marsolek - Berlin**

**The Causes and Severity of  
Errors in Intensive Care Units**

**Osnat Turgeman-Bashkin,**

**David Shinar, Ehud Zmora - BGU**

**Performance Measures for  
Medical Systems**

**Anat Raskin Segal, Avi Porath,**

**Gad Rabinowitz - BGU**

**Optimal Treatment Priority under  
Partial Information**

**Gad Rabinowitz, Michael Hasson - BGU**

**A simple and Intuitive Simulation  
Tool for Analyzing Emergency  
Department Operations**

**David Sinreich, Yariv N. Marmor -**

**Haifa**

**Using a Theory of Constraints  
(TOC) approach in the OR**

**Joseph Pliskin - BGU**

# Scientific Program

## Day 2 - February 24

09:00-10:30 **Session 5**

### **Alerts in Medical Settings**

**Chair: Prof. Wolfgang Friesdorf - Berlin**

#### **Nurses' Reactions to Alerts in an NICU**

**David Shinar, Yuval Bitan,  
Ehud Zmora, Joachim Meyer - BGU**

#### **Dynamic Modeling of Responses to alerts**

**Joachim Meyer - BGU**

#### **Game Theoretical Analyses of Alerting System Design**

**Joachim Meyer, Jan Potters,  
Arieh Gavious - BGU**

#### **Cueing in Orienting and Alerting Tasks**

**Masha Maltz - BGU**

#### **Physiological Measures for Mental and Physical Load; Fatigue and Alertness While Working**

**Adi Ronen, Yair Cassuto,  
David Shinar - BGU**

#### **Physicians' Responses to Computerized Advice**

**Geva Vashitz, Harel Gilutz,  
Joachim Meyer - BGU**

10:30-10:45 Coffee Break

# Scientific Program

10:45-12:15 **Session 6**  
**Machine Design and Operation**  
Chair: Prof. Wolfgang Koller -  
Austria

**Detection of Cause and Effect  
Relations in Visually Displayed  
Information**

Peter Bak, Joachim Meyer - BGU

**Hand Gesture Control of Medical  
Devices**

Juan Wachs, Helman Stern,  
Yael Edan - BGU

**Mobile Robots for Medical  
Applications**

Uri Kartoun, Yael Edan,  
Helman Stern - BGU

**Imaging of Brain Magnetic Fields  
with an atomic Magnetometer**

Andrei Ben-Amar Baranga,  
Dan Hoffman, Michael V. Romalis - BGU  
and Princeton, USA

**Computational Motor Control -  
“The Extended Hand”**

Amir Karniel - BGU

12:15-13:30 **Session 7**  
**IEM Laboratories Tour**

Moderator: Prof. Yael Edan - BGU

13:30-14:45 Lunch

14:45-16:00 **Session 8**  
**Concluding Discussion**

**Participants:** - Prof. Yael Edan  
- Prof. G. Gurman  
- Prof. Wolfgang Friesdorf  
- Prof. Wolfgang Koller

# List of Speakers

**Peter Bak**, Ph.D. student,  
Dept. of Industrial Engineering & Management-BGU

**Andrei Ben Amar-Baranga**, Ph.D. Research Scientist,  
Nuclear Research Center-Beer-Sheva

**Yuval Bitan**, Ph.D.  
Dept. of Industrial Engineering & Management - BGU,  
and Cognitive Technologies Laboratory, Dept. of  
Anesthesia and Critical Care, University of Chicago - USA

**Yair Cassuto**, Professor Emeritus,  
Unit of Safety Engineering - BGU

**Yael Edan**, Ph.D. Associate Professor,  
Chair Dept. of Industrial Engineering & Management - BGU

**Wolfgang Friesdorf**, Professor Dr. med.  
Director, Dept. for Human Engineering and  
Ergonomics, Berlin - Germany

**Arieh Gavius**, Ph.D. Senior Lecturer,  
Dept. of Industrial Engineering & Management - BGU

**Harel Gilutz**, M.D.  
Dept. of Cardiology, FOHS-BGU and Director,  
Intensive Coronary Care Unit - Soroka Medical Center

**Gabriel M. Gurman** M.D. Professor  
Vice Dean, FOHS-BGU and Director Dept. Critical  
Care - Soroka Medical Center

**Thomas Heil**, Dr. med.  
Vice Chairman of the German Society for Integrated  
Health Care, Berlin - Germany

**Michael Hasson**, Ph.D. student,  
Dept of Industrial Engineering & Management - BGU

**Dan Hoffman**, Ph.D.  
Dept. of Physics, Princeton University, USA

**Kathrin Jung**, Dipl. Eng.  
Storz Company - Germany

**Amir Karniel**, Ph.D. Lecturer,  
Dept. of Biomedical Engineering - BGU



**Wolfgang Koller**, Associate Professor, Dr. med.  
University Clinics for Anesthesia and Intensive  
Medicine, Innsbruck - Austria

**Uri Kartoun**, Ph.D. student,  
Dept. of Industrial Engineering & Management - BGU,  
Visiting Researcher, Insitute for Medical Informatics,  
Washington Hospital Center - USA

**Vicenzo Lanza**, M.D.  
Chief, Dept. of Anesthesia, Ospedale Buccheri, La  
Ferla Fatebenefratelli, Palermo - Italy; Chief Editor, J.  
of Clinical Monitoring and Computing

**Masha Maltz**, Ph.D. Lecturer,  
Dept. of Industrial Engineering & Management - BGU

**Yariv N. Marmor**, Ph.D. student,  
Dept. of Industrial Engineering & Management,  
Technion - Haifa

**Ingo Marsolek**, Dr. Ing.  
Chief Executive Officer. Institute for Health Care  
Systems Management, Berlin, Germany; ESCTAIC  
Secretary General

**Joachim Meyer**, Ph.D. Associate Professor,  
Dept. of Industrial Engineering & Management - BGU

**Azriel Perel**, M.D. Professor,  
Tel Aviv University and Chairman, Dept. of  
Anesthesiology, Sheba Medical Center, Tel Hashomer

**Joseph Pliskin**, Ph.D. Professor,  
Dept. of Industrial Engineering & Management, Sidney  
Liswood Chair in Health Management - BGU

**Avi Porath**, M.D. Professor,  
FOHS-BGU, Director, Dept. of Internal Medicine 6,  
Soroka Medical Center

**Jan Potters**, Ph.D.  
Faculty of Economics and Business Administration,  
Tilburg University, The Netherlands

**Gad Rabinowitz**, Ph.D. Associate Professor,  
Dept. of Industrial Engineering & Management - BGU



**Adi Ronen**, Ph.D. Researcher,  
Dept. of Industrial Engineering & Management - BGU

**Michael V. Romalis**, Professor  
Dept. of Physics, Princeton University - USA

**Anat Raskin Segal**, Ph.D. student,  
Dept. of Industrial Engineering & Management - BGU

**Yoram Shapira**, M.D., Ph.D. Professor,  
Chair, Division of Anesthesiology, FOHS - BGU;  
Director, Dept. of Anesthesia, Soroka Medical Center

**David Shinar**, Ph.D. Professor,  
Dept. of Industrial Engineering & Management; George  
Shrut Professor of Human Performance - BGU

**David Sinreich**, Ph.D. Senior Lecturer,  
Dept. of Industrial Engineering & Management,  
Technion - Haifa

**Helman Stern**, Ph.D. Professor,  
Dept. of Industrial Engineering & Management - BGU

**Osnat Turgeman-Bashkin**, Ph.D. student,  
Dept. of Industrial Engineering & Management - BGU

**Geva Vashitz**, Ph.D. student,  
Dept. of Industrial Engineering & Management - BGU

**Juan Wachs**, Ph.D. student,  
Dept. of Industrial Engineering & Management - BGU;  
Visiting Researcher, Institute for Medical Informatics,  
Washington (D.C.) Medical Center - USA

**Ehud Zmora**, M.D. Professor  
FOHS-BGU, Director Dept. of Neonatology, Division  
of Pediatrics - Soroka Medical Center