Programs on science and peace research at Hamburg University

October 2011

Malte Göttzsche

Carl Friedrich von Weizsäcker Centre for Science and Peace Research (ZNF)
Two peace research institutes under one roof

- Carl Friedrich von Weizsäcker Centre for Science and Peace Research (ZNF)
- Institute for Peace Research and Security Policy (IFSH)
Teaching program on science and peace research

- Module for Master of Peace and Security Studies (MPS)

- Module “Science, Peace Research and International Security” for BSc- and MSc-studies (physics, biology, chemistry, meteorology, oceanography)

- Optional seminars and lectures for general studies in all disciplines
IFSH Master of Peace and Security Studies (MPS)

The accredited transdisciplinary- and interdisciplinary two-semester program to provide highly qualified graduates in humanistic, social or scientific disciplines from German or foreign universities with the instruments of practice-oriented research.

The MPS comprises six modules:

- International Peace and Security Policy
- International Law in War and Peacemaking
- Natural Sciences and Peace
- Ethics of Peace
- Economic Globalisation and Conflict
- Interdisciplinary Module
Optional lectures for general studies in all disciplines

- Lectures on Challenges for Mankind and Responsibility of Science
Optional lectures for general studies in all disciplines

- Lectures on Scientific Contributions to Peace Research

Goals

The conduct of war, disarmament and civil crisis prevention are heavily influenced by scientific and technological aspects. In this lecture series the fundamentals and basic methods of science as well as the interactions of arms dynamics are illustrated. A main focus are weapons of mass destruction, modern conventional arms, terrorism and the instruments to constrain them: arms control, crisis prevention, confidence building and verification.

Students should acquire basic knowledge of qualitative and quantitative analysis of conflicts, the interaction of weapons, strategies and diplomacy and the tools to prevent wars and constrain dangerous use of weapons.
Optional lectures for general studies in all disciplines

- Lectures on Scientific Contributions to Peace Research

Content

- Arms control and disarmament, history, theory and practice, treaties
- Nuclear weapons, history, design, effects and implications
- Theory and practice of vertical proliferation and arms control: arms dynamics and arms races, missiles, Cold War, security dilemma, arsenals, new nuclear weapons, bilateral treaties, test ban, SALT, START, SORT, unilateral steps
- Horizontal nuclear proliferation and arms control: nuclear programmes, fuel cycle, dual use, Non-Proliferation Treaty NPT, IAEA, Additional Protocol, nuclear- weapons-free zones, export controls
- Principles and examples of verification: procedures, technologies, inspectorates, classic nuclear safeguards, new technologies under the Additional Protocol
- Missiles and space: intercontinental ballistic missiles, missiles defense, ABM Treaty, Outer Space Treaty, military use of space, space debris
- Chemical weapons: history, effects, non-lethal weapons, CW arms control
- Biological weapons: history, effects, production, terrorisms, new scientific developments, BW arms control
- Practise of arms control: how are international negotiations conducted? New developments in arms control
Science Module

- Physical basics of peace research
  - “Ballistic missiles and missile defense”
  - “Neutron and gamma detectors for nuclear verification”
  - “Satellite imagery”
  - “Production, operation and effects of nuclear and radiological weapons”
  - “Detection of signatures from banned nuclear activities from long distances”
  - “Trace analysis of Krypton-85 through an magneto-optical trap”
  - “Simulation of atmospheric transport for verification purposes”
  - “Material accounting of plutonium, HEU and tritium”
Student statistics

- Nationalities in the Master of Peace and Security Studies (MPS)
Student statistics

Total number of students by semester (left: incremental and bottom: cumulative)

- blue: Participation (2 CP)
- violet: Examination (3 CP)
Student statistics

- Break-down by departments

- Economics and Politics: 28
- Social Sciences: 31
- Economic Science: 4
- MPS: 42
- Guest Students: 39
- Earth Sciences: 11
- Mathematics: 7
- Biology: 17
- Chemistry: 12
- Physics: 344
- Languages, Literature and Media: 2
- Protestant Theology: 2
- Philosophy and History: 2
- Oriental Studies: 1
- Music: 1
- Art: 1
Further teaching activities

- Summer Academy “Young Scientist Cooperate for Peace“ 10 August 2009 – 21 August 2009 (see below)
- Simulation game *Model United Nations*
- Internships at institution in the field of arms control
- Excursions
- ESARDA training course on nuclear safeguards and non-proliferation
Simulation game

Model United Nations

Topics

- Security Council session on the Iranian nuclear program
- 2008 NPT PrepCom session in Geneva
- Convention on Climate Change: Kyoto Protocol follow-up
- 2010 NPT RevCon
- 2012 Middle East Conference
Internships at institutions working in the field of arms control

- Fraunhofer Institute for Technological Trend Analysis (INT) in Euskirchen
- Federal Institute for Geosciences and Natural Resources (BGR) in Hannover
- Forschungszentrum Jülich - ICG-4 Agrosphäre
- The Federal Office for Radiation Protection (BfS) in Freiburg
- CTBTO PrepCom, Wien
ESARDA training course on nuclear safeguards and non-proliferation

5th ESARDA COURSE
Nuclear Safeguards and Non Proliferation

Ispra, Italy, March 30th – April 3rd, 2009
Organised by the European Safeguards Research & Development Association, WG TKM
Hosted by the Nuclear Safeguards Unit, Joint Research Centre Ispra, Italy
Summer-Academy
Young Scientists Cooperate For Peace

02 August - 15 August 2009 in Hamburg

www.znf.uni-hamburg.de/scoop.html
# Summer-Academy

**Young Scientists Cooperate for Peace**

<table>
<thead>
<tr>
<th>Schedule</th>
<th>1st week:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>Monday August, 3rd</td>
</tr>
<tr>
<td>9:00-10:30</td>
<td>Welcome Session / Responsibility of Science and Technology Conflicts</td>
</tr>
<tr>
<td>Martin Kalinowski</td>
<td>Iris Hunger</td>
</tr>
<tr>
<td>10:30-11:00</td>
<td>Break</td>
</tr>
<tr>
<td>11:00-12:30</td>
<td>Introduction of Participants</td>
</tr>
<tr>
<td>13:30-15:00</td>
<td>International treaties</td>
</tr>
<tr>
<td>Michael Brzoska</td>
<td>Irene Schwier</td>
</tr>
<tr>
<td>15:00-15:30</td>
<td>Break</td>
</tr>
<tr>
<td>15:30-17:00</td>
<td>Seminar</td>
</tr>
</tbody>
</table>
### Summer-Academy
#### Young Scientists Cooperate for Peace

<table>
<thead>
<tr>
<th>Time</th>
<th>Monday August, 10th</th>
<th>Tuesday August, 11th</th>
<th>Wednesday August, 12th</th>
<th>Thursday August, 13th</th>
<th>Friday August, 14th</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00-10:30</td>
<td><strong>Missile and missile defense systems</strong></td>
<td><strong>The Role of Science for Positive and Negative Peace</strong></td>
<td><strong>Role-play (&quot;National Statements&quot;)</strong></td>
<td><strong>Presentation of the Outcomes</strong></td>
<td><strong>Break</strong></td>
</tr>
<tr>
<td></td>
<td>Marcel Dickow</td>
<td>Martin Kalinowski</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:30-11:00</td>
<td><strong>Break</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>Break</strong></td>
</tr>
<tr>
<td>11:00-12:30</td>
<td><strong>Seminar</strong></td>
<td><strong>Revolutions in warfare, RMA-technologies and information warfare</strong></td>
<td><strong>Role-play (&quot;Negotiations&quot;)</strong></td>
<td>&quot;Working for Peace - Career Chances in peace and security&quot;</td>
<td><strong>Presentation of the Outcomes</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Götz Neuneck</td>
<td></td>
<td>In cooperation with the Career Centre of the University of Hamburg</td>
<td></td>
</tr>
<tr>
<td>12:30-13:30</td>
<td><strong>Lunch break</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>Lunch break</strong></td>
</tr>
<tr>
<td>13:30-15:00</td>
<td><strong>Dual use of satellites</strong></td>
<td><strong>Colleagues of the ZNF introduce their work</strong></td>
<td><strong>Role-play (Discussion and follow-up work)</strong></td>
<td></td>
<td><strong>Angelika Beer</strong></td>
</tr>
<tr>
<td></td>
<td>Dieter Engels</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15:00-15:30</td>
<td><strong>Break</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>Break</strong></td>
</tr>
<tr>
<td>15:30-17:00</td>
<td><strong>Preparation of the Role-play</strong></td>
<td></td>
<td><strong>Break</strong></td>
<td><strong>Preparation of the talks and posters for Friday</strong></td>
<td><strong>Break</strong></td>
</tr>
</tbody>
</table>
Workshop „Teaching ethics and peace to science and engineering students“, 15-17 Oct 2008

The natural and engineering sciences produce knowledge and technology which can be abused or used to the better. Students of science and engineering are often unaware of related dilemmas which they will face in their future careers.

We invited colleagues and experts with practical experience to come to Hamburg for this three day workshop for sharing experience and exchanging insight and inspiration for future work.
Conclusions

- Responsible use of science and engineering is essential.
- All students must be reached.
- Natural and engineering faculties lag behind.
- Different approaches exist.
- External funding decisions or guidelines are important.
- A nucleus of motivated and competent staff is essential.
- Staff nuclei have to be augmented.
- Active learning forms are important.
- Need for teaching material.
- Going beyond the individualistic approach.
Recommendations

• Provide external funding and guidelines!
• Make it compulsory!
• Motivate teaching staff
• Use active learning forms!
• Enhance the attractiveness for your students
For more information:

www.znf.uni-hamburg.de
www.ifsh.de