Master degree program
Physics of the Earth and Atmosphere

Institute of Geophysics and Meteorology, University of Cologne

- Offered since winter term 2009/2010
- reaccreditation (WS2015/16)
- Duration of regular course: 4 semesters
- Cooperation with the University of Bonn

1. Part: Lectures and exercises
   (1 & 2 semester)
   - 2 common compulsory modules
     - Prognostic modelling (winter term)
     - Inverse modellierung (summer term)
   - 5 subject-specific compulsory modules
   - 4 elective modules

2. Part: Research
   (3 & 4 semester)
   - Literature seminar
   - Project work
   - Master thesis
Web site

http://www.geomet.uni-koeln.de

Account: student

Password: LifeG0es0n
Master „Physics of the Earth and Atmosphere“

- The first part contains 11 modules, each having 6 credit points. The elective area covers 24 credit points.
- Two focus areas: Geophysics or Meteorology. Change of focus is possible in the 1. semester.
## Proposed Plan of Study of the M. Sc. Physics of the Earth and Atmosphere

**Begin of study: summer term**

<table>
<thead>
<tr>
<th>1st term</th>
<th>2nd term</th>
<th>3rd term</th>
<th>4th term</th>
</tr>
</thead>
</table>
| **Inverse Modelling**  
6 CP  
Weight 6/120 | **Prognostic Modelling**  
6 CP  
Weight 6/120 | **Literature Seminar and Current Research Questions**  
9 CP  
Weight 9/120 | **Master Thesis**  
30 CP  
Weight 30/120 |
| **Compulsory Module 1 of Main Focus**  
6 CP  
Weight 6/120 | **Compulsory Module 3 of Main Focus**  
6 CP  
Weight 6/120 |  
| **Compulsory Module 2 of Main Focus**  
6 CP  
Weight 6/120 | **Compulsory Module 4 of Main Focus**  
6 CP  
Weight 6/120 | **Project Work**  
15 CP  
Weight 15/120 |
| **Elective Module 1**  
6 CP  
Weight 6/120 | **Compulsory Module 5 of Main Focus**  
6 CP  
Weight 6/120 |  
| **Elective Module 2**  
6 CP  
Weight 6/120 | **Elective Module 3**  
6 CP  
Weight 6/120 | **Elective Module 4**  
6 CP  
Weight 6/120 |
**Master „Physics of the Earth and Atmosphere“**

### 1.4 Semesterbezogene LP-Übersicht / Semester-based CP-Overview

<table>
<thead>
<tr>
<th>Sem.</th>
<th>Modul</th>
<th>Contact time</th>
<th>Time for preparation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Prognostic Modelling</td>
<td>60</td>
<td>120</td>
</tr>
<tr>
<td>1</td>
<td>GEOEEV : GEOMET I</td>
<td>75</td>
<td>105</td>
</tr>
<tr>
<td>1</td>
<td>GEOSEIS : GEOMET II</td>
<td>75</td>
<td>105</td>
</tr>
<tr>
<td>1</td>
<td>GEOSOSYS : GEOMET III</td>
<td>60</td>
<td>120</td>
</tr>
<tr>
<td>1</td>
<td>Elective I</td>
<td>75</td>
<td>105</td>
</tr>
<tr>
<td>2</td>
<td>Inverse Modelling</td>
<td>60</td>
<td>120</td>
</tr>
<tr>
<td>2</td>
<td>GEOFPR : GEOMET IV</td>
<td>60</td>
<td>120</td>
</tr>
<tr>
<td>2</td>
<td>GEOSPH : GEOMET V</td>
<td>75</td>
<td>105</td>
</tr>
<tr>
<td>2</td>
<td>Elective II</td>
<td>75</td>
<td>105</td>
</tr>
<tr>
<td>2</td>
<td>Elective III</td>
<td>75</td>
<td>105</td>
</tr>
<tr>
<td>3</td>
<td>Literature Seminar and Current Research Questions</td>
<td>30</td>
<td>240</td>
</tr>
<tr>
<td>3</td>
<td>Project Work</td>
<td>30</td>
<td>420</td>
</tr>
<tr>
<td>3</td>
<td>Elective IV</td>
<td>75</td>
<td>105</td>
</tr>
<tr>
<td>4</td>
<td>Master thesis</td>
<td>30</td>
<td>870</td>
</tr>
</tbody>
</table>

*mandatory*
Master „Physics of the Earth and Atmosphere“

Compulsory for main focus  Bold case means winter term

Geophysics

- **GEOEEM**
  Direct Current and Electromagnetic Exploration Methods

- **GEOAFC**
  Advanced Geophysical Field Course:

- **GEOSEIS**
  Seismology

- **GEOSOSYS**
  Geophysics of the solar system

- **GEOSPACE**
  Space Physics:

Meteorology

- **METABL**
  Atmospheric Boundary Layer

- **METCLOUD**
  Clouds and Precipitation

- **METCLIMATE**
  Physical Climatology

- **METADM**
  Atmospheric Dynamics and Modeling

- **METRAD**
  Radiation
Elective modules

In addition to the modules of the other focus, see appendix examination regulations. Here is a list of further elective modules:

- Star Formation (Physics Master ‘s degree program, 4 CP)
- Computational Astrophysics (Physics Master ‘s degree program, 4 CP)
- Physics of the Interstellar Medium (Physics Master ‘s degree program, 4 CP)
- Active Galaxies (Physics Master ‘s degree program, 4 CP)
- Physics Lab B (2 semesters)
- Numerische Softwareentwicklung in C und C++ (14722.0037)

Elective modules meteorology:
- METRS Advanced Remote Sensing (ST)
- METCHEM Atmospheric Chemistry (WT)
- METEN Energy Meteorology (WT-block course)
- METFUT Future Challenges of Meteorology – project work (WT/ST)
- METTOP Challenging Meteorological Topics - lectures (WT/ST)

METEN as block course from 11 to 14 February 2019
preliminary meeting January 2020
<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>14904.2011</td>
<td>PM, Prognostic Modelling - N. N.</td>
</tr>
<tr>
<td>14904.2051</td>
<td>GEOEEM, Direct Current and Electromagnetic Exploration Methods - B. Tezkan, P. Yogeshwar</td>
</tr>
<tr>
<td>14904.2081</td>
<td>GEOSOSYS, Geophysics of the Solar System - J. Saur</td>
</tr>
<tr>
<td>14904.2071</td>
<td>GEOSEIS, Seismology - B. Knapmeyer-Endrun</td>
</tr>
<tr>
<td>14904.2111</td>
<td>METCLOUD, Clouds and Precipitation - S. Crewell</td>
</tr>
<tr>
<td>14904.2131</td>
<td>METADM, Atmospheric Dynamics and Modelling - Y. Shao, H. Elbern</td>
</tr>
<tr>
<td>14904.2141</td>
<td>METRAD, Atmospheric Radiation - U. Löhner</td>
</tr>
<tr>
<td>14904.2151</td>
<td>METPHA, Physics of the Atmosphere - F. Steffany</td>
</tr>
<tr>
<td>14904.2191</td>
<td>METCHEM, Atmospheric Chemistry - A. Wahner, T. Mentel</td>
</tr>
<tr>
<td>14904.2211</td>
<td>METEN, METEN+, Energy Meteorology - S. Emeis, M. Schröedter-Homscheidt</td>
</tr>
<tr>
<td>14904.2041</td>
<td>PWORK, Project Work (BMD)</td>
</tr>
<tr>
<td>14904.2202</td>
<td>MASTER, Master Colloquium (BMD)</td>
</tr>
</tbody>
</table>

[http://www.geomet.uni-koeln.de/ws1920.html](http://www.geomet.uni-koeln.de/ws1920.html)
Research oriented part

- **Literature seminar (9 CP):**
  The subject is selected in agreement with the advisor, no continuation of the Bachelor’s thesis.
  Written elaboration and 20 minute talk in a working group seminar.
  Subsequent Questions and Answers

- **Project Work (15 CP):**
  Preparation of the Master’s thesis, e.g. feasibility study.
  Completed by a talk (30 min), with Q&A (max 15 min).

- **Master’s thesis (30 CP):**
  Duration 6 months,
  terminated by a Colloquium (30 min), with Q&A (max 15 min).
Seminars

BMD, Bachelor, Master and PhD Seminar [http://www.geomet.uni-koeln.de/3115.html](http://www.geomet.uni-koeln.de/3115.html)

**Tuesdays**, Room 3.136  12:00

**Thursdays**, Room 3.136  9:15
### Vorl. Raum- und Stundenplan WS 2019/20

Institut für Geowissenschaften Abt. Meteorologie (IGAM), Auf dem Hügel 20

<table>
<thead>
<tr>
<th>Zeit</th>
<th>Montag</th>
<th>Dienstag</th>
<th>Mittwoch</th>
<th>Donnerstag</th>
<th>Freitag</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HS</td>
<td>SR</td>
<td>LS</td>
<td>MK</td>
<td></td>
</tr>
<tr>
<td>8:30</td>
<td>MMM</td>
<td>ThMet2</td>
<td>SpTTM</td>
<td>14tg</td>
<td>RRRRS</td>
</tr>
<tr>
<td>9</td>
<td>MMM</td>
<td>ThMet2</td>
<td>C1</td>
<td>ThMet2</td>
<td>RRRRS</td>
</tr>
<tr>
<td>10</td>
<td>SemiBA</td>
<td>G1</td>
<td>SpTTM</td>
<td>FESem</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MMM</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>HydGP</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>SemiBA</td>
<td>G1</td>
<td>SpTTM</td>
<td>FESem</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MMM</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>HydGP</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>VerSim</td>
<td>G1</td>
<td>Einf 1</td>
<td>Klima</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>HydGP</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>VerSim</td>
<td>13-15:15</td>
<td>Einf 1</td>
<td>Klima</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TS AS</td>
<td></td>
<td>HydGP</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Rd AS</td>
<td>TS AS</td>
<td>M4</td>
<td>DynAt</td>
<td>G2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Einf 1 T</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>FE AS</td>
<td>M4</td>
<td>DynAt</td>
<td>Synop2</td>
<td>G2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Einf 1 T</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>FE AS</td>
<td>M4</td>
<td>DynAt</td>
<td>Synop2</td>
<td>G2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Einf 1 T</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Kolloq</td>
<td>M4</td>
<td>DynAt</td>
<td>Syn20</td>
<td>G2</td>
</tr>
<tr>
<td>18</td>
<td>Kolloq</td>
<td></td>
<td></td>
<td>Syn20</td>
<td>G2</td>
</tr>
</tbody>
</table>

**V** Vorlesung
**Ü** Übung
**AS** Arbeitsgruppen Seminar
**T** Tutorial
**TS** Theoretische Synoptik
**KD** Klimodynamik
**SD** Stochastische Dynamik
**Rd** Radar
**HS** Hörsaal
**SR** Seminarraum
**LS** Lesesaal
**MA** Meckenheimer Allee 176

**Bachelor**
1. Sem.
2. Sem.
4. Sem.

**Master**
HydGP Hydrogeophysics
DynAt Dynamic of the Atmosphere
Clidyn Climate Dynamics and Statistics
EaQ Earthquake Physics

**MK** Masterkurse in Köln
M = Meteorologie
G = Geophysik

M1 Atmos. Radiation
M2 Atm. & Meteorology
M3 Atm. Chemistry
M4 Clouds and Precip.
G1 Elektro. Verfahren
G2 Sonnensysteme
G3 Seismologie
PM Prognostic Modelling
Enrollment in Bonn required

• Simplified procedure exists. Please get soon in touch with Lex Wennmacher.