1. **Module title:** Computer-aided Mechanical Design

2. **Field / responsibility of:** Physics / the department, the Dean of Studies

3. **Module contents:**
   This course provides an introduction to computer-aided 3D design in mechanical engineering:
   - Creating 2D drafts, parametric dimensions, dependencies
   - Creating 3D components, including extrusion and rotation
   - Rounding, beveling, drilling, threading
   - Placing components, inserting standard parts (screws, bearings, etc.), moving components
   - Creating presentation views and exploded view drawings
   - Creating standardized drawing views, isometric views, detail views and sectional views
   - Presentation: From CAD construction and CAM programming to CNC production

4. **Qualification objectives of the module / competencies to be acquired:**
   Students will learn all important techniques of computer-based mechanics/3D construction using AutoDesk Inventor.

5. **Prerequisites for participation:**
   a) **Recommended knowledge:** None
   b) **Prerequisite courses:** None

6. **Module can be used for:**
   M.Sc. (and B.Sc.) in Physics, Nanoscience, Computational Science

7. **Module is offered:** On a semiannual basis

8. **Module can be completed in:** 1 semester

9. **Recommended semester of study:** 1

10. **Overall module workload / number of credit points:**
    **Workload:**
    Total number of hours: 90
    **Allocation:**
    1. **Attendance:** 2 credit hours
    2. **Independent study (including exam preparation/ exam):** 50 hours
    **Credit points:** 3

The successful completion of all assignments listed in items 11 and 12 is a prerequisite for receiving the credit points mentioned in item 10.

11. **Module components:**

<table>
<thead>
<tr>
<th>Nr.</th>
<th>Req./req. elective</th>
<th>Form of teaching</th>
<th>Subject area/topic</th>
<th>Credit hours</th>
<th>Coursework</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHY-M-VS 1 5.1</td>
<td>Compulsory</td>
<td>Lecture Practical course</td>
<td>Computer-aided mechanical design</td>
<td>2</td>
<td>Successful completion of the practical exercises (with the instructor signing off each course session); project work</td>
</tr>
</tbody>
</table>
12. Module exam:

<table>
<thead>
<tr>
<th>Nr.</th>
<th>Competence / topic</th>
<th>Type of exam</th>
<th>Duration</th>
<th>Time / notes</th>
<th>Weighting for module grade</th>
</tr>
</thead>
</table>

13. Notes:

Successful participation in the practical course is a prerequisite for taking the module exam.