


**Module: Specialization II**

Module No.: physics630


**Course: Advanced Theoretical Particle Physics**

Course No.: physics636

| Category | Type                   | Language | Teaching hours | CP | Semester |
|----------|------------------------|----------|----------------|----|----------|
| Elective | Lecture with exercises | English  | 3+2            | 7  | ST       |

**Requirements:****Preparation:**

Theoretical Particle Physics (physics615)

**Form of Testing and Examination:**

Requirements for the examination (written): successful work with the

**Length of Course:**

1 semester

**Aims of the Course:**

Survey of methods of theoretical high energy physics beyond the standard model, in particular supersymmetry and extra dimensions in regard to current research

**Contents of the Course:**

Introduction to supersymmetry and supergravity,  
 Supersymmetric extension of the electroweak standard model,  
 Supersymmetric grand unification,  
 Theories of higher dimensional space-time,  
 Unification in extra dimensions

**Recommended Literature:**

J. Wess; J. Bagger; Supersymmetry and supergravity (Princeton University Press 1992)  
 H. P. Nilles, Supersymmetry, Supergravity and Particle Physics, Physics Reports 110 C (1984) 1  
 D. Bailin; A. Love; Supersymmetric Gauge Field Theory and String Theory (IOP Publishing Ltd. 1994)  
 M. F. Sohnius; Introducing supersymmetry, (Phys.Res. 128 C (1985) 39)  
 P. Freund; Introduction to Supersymmetry (Cambridge University Press 1995)