Modules:

astro830 **Elective Advanced Lectures**
astro850 **Modern Astrophysics**

Course: universitätbonn Numerical Dynamics

Course No.: astro854

Category	Type	Language	Teaching hours	CP	Semester
Elective	Lecture with exercises	English	2+1	4	ST

Requirements:

Preparation:

Form of Testing and Examination:
Requirements for the examination (written): successful work with exercises and programming tasks

Length of Course:
1 semester

Aims of the Course:
The students will have to familiarize themselves with the various numerical recipes to solve the coupled 2nd-order differential equations as well as with the limitations of these methods

Contents of the Course:
The two-body problem and its analytical solution. Ordered dynamics: integration of planetary motion, solar system, extra-solar planets. Collisional dynamics: integration of stellar orbits in star clusters, star-cluster evolution. Collisionless dynamics: integration of stellar orbits in galaxies, cosmological aspects

Recommended Literature:
Write-up of the class;
S. J. Aarseth; Gravitational N-body simulations: Tools and Algorithms (Cambridge University Press, 2003)