Modules:

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

Course: Physics of Supernovae and Gamma-Ray Bursts

Course No.: astro8502

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

Requirements:

Preparation:
Introductory astronomy and cosmology lectures

Form of Testing and Examination:
Written or oral examination, successful exercise work

Length of Course:
1 semester

Aims of the Course:
The student will learn basic physics on supernova and gamma-ray burst, and will have an overview on their applications to various fields of astrophysics.

Contents of the Course:
Basic physics on stellar hydrodynamics, radiation processes, and stellar death.
Type Ia supernova: observations and theory. Application to cosmology
Core collapse supernova: observations and theory
Gamma-ray bursts: observations and theory.
Implications for massive star population and star-formation history
Supernova nucleosynthesis and chemical evolution of galaxies
Explosions of the first generations of stars
Some related issues: supernova remnants, neutrinos, shock break-out, etc.

Recommended Literature:
Lecture notes with key references for each topic will be provided.