Grading Criteria for the course Astrophysical Gas Dynamics (AS7002), 7.5hp.

The course plan defines as course objectives that the student after the course is expected to

- know the gas dynamic equations, and understand their properties.
- be able to solve elementary gas dynamic problems, such as stationary solutions and shock solutions.
- know the fundamental principles behind numerical solutions of the gas dynamic equations.
- know and understand the most important types of instabilities.
- know some astrophysical applications of gas dynamics, for example accretion discs, stellar winds and astrophysical blast waves.

The course is examined through a written exam. In addition to passing the exam, the student also needs to obtain approval of a written report for the computer exercise. The report is not graded.

The criteria for grading the four course objectives are as listed below. To pass the course, all four partial grades need to be at least an E. If *one* of the partial grades is an Fx, it will be possible to turn this into an E through an extra assignment to be determined by the teacher. The final grade is set according to the average of the four partial grades.

See the next page for an overview of the grading criteria for the course objectives.

Grade	The student
A	• can fully describe the gas dynamic equations, with and without magnetic fields, as well as derived equations; can demonstrate excellent understanding of the underlying physical and mathematical properties. • can solve complex elementary gas dynamic problems. • shows excellent understanding of the principles of numerical gas dynamics. • shows excellent understanding of the various types of fluid instabilities. • can demonstrate excellent knowledge of astrophysical applications of gas dynamics
B	• can describe the gas dynamic equations, with and without magnetic fields, as well as derived equations; can demonstrate a very good understanding of the underlying physical and mathematical properties. • can solve relatively complex elementary gas dynamic problems. • shows a very good understanding of the principles of numerical gas dynamics. • shows a very good understanding of the various types of fluid instabilities. • can demonstrate a very good knowledge of astrophysical applications of gas dynamics.
C	• can describe the gas dynamic equations, with and without magnetic fields, as well as derived equations; can demonstrate a good understanding of the underlying physical and mathematical properties. • can solve elementary gas dynamic problems. • shows a good understanding of the principles of numerical gas dynamics. • shows a good understanding of the various types of fluid instabilities. • can demonstrate a good knowledge of astrophysical applications of gas dynamics.
D	• can describe most gas dynamic equations or derived equations; can demonstrate a satisfactory understanding of the underlying physical and mathematical principles. • can solve parts of elementary gas dynamic problems. • shows a satisfactory understanding of the principles of numerical gas dynamics. • shows a satisfactory understanding of the various types of fluid instabilities. • can demonstrate a satisfactory knowledge of astrophysical applications of gas dynamics.
E	• can describe some basic gas dynamic equations or derived equations; can demonstrate a sufficient understanding of the underlying physical and mathematical principles. • can work with elementary gas dynamic problems, without necessarily finding the solution. • shows sufficient understanding of the principles of numerical gas dynamics. • shows sufficient understanding of fluid instabilities. • can demonstrate a basic knowledge of astrophysical applications of gas dynamics.
Fx	• has insufficient knowledge of the subject. Parts of the learning goals have not been achieved.
F	• has severely insufficient knowledge of the subject. Large parts of the learning goals have not been achieved.