Grading criteria

Grade	Typical score (%)	Grading	Description
A	91-100	Excelent	The student can: a. Thoroughly describe the underlying ideas of the Lagrangian and Hamiltonian formalism. b. Thoroughly describe how constraints are handled, and what kind of possible constraints there are. Further be able to explain the connection between symmetries and conserved quantities. c. Show how the Euler-Lagrange's and Hamilton's equations are derived from the Lagrangian and Hamiltonian. Solve simple variational problems. d. Describe the theory Hamilton-Jacobi. e. Thoroughly describe what it is that characterize regular and chaotic evolution. Describe the meaning of the KAM theorem. f. Describe central motion and what the inertia tensor is.
B	85-90	Very good	The student can: a. Thoroughly describe the underlying ideas of the Lagrangian and Hamiltonian formalism. b. Describe how constraints are handled, and what kind of possible constraints there are. Further be able to explain the connection between symmetries and conserved quantities. c. Show how the Euler-Lagrange's and Hamilton's equations are derived from the Lagrangian and Hamiltonian. Explain the idea behind variational problems- d. Describe the theory Hamilton-Jacobi. e. Describe what it is that characterize regular and chaotic evolution. Describe the meaning of the KAM theorem. f. Describe central motion and what the inertia tensor is.
C	78-84	Good	The student can: a. Describe the underlying ideas of the Lagrangian and Hamiltonian formalism. b. Describe how constraints are handled. Discuss the connection between symmetries and conserved quantities. c. Explain how the Euler-Lagrange's and Hamilton's equations are derived. d. Describe the theory Hamilton-Jacobi. e. Describe what it is that characterize regular and chaotic evolution. f. Describe central motion and what the inertia tensor is.

D	70-77	Satisfying	The student can: a. Describe the underlying ideas of the Lagrangian and Hamiltonian formalism. b. Describe how constraints are handled. c. Explain how the Euler-Lagrange's and Hamilton's equations are derived. d. Describe what it is that characterize regular and chaotic evolution, for example what a Lyapunov exponent is. e. Describe central motion and what the inertia tensor is.
E	60-69	Enough	The student can: a. Describe the underlying ideas of the Lagrangian and Hamiltonian formalism. b. Descriobe the importance of constraints. c. Explain what the Euler-Lagrange och Hamilton's equations describe. d. Explain what is characteristic for chaotic motion.
Fx	45-59	Unsatisfying	The student does not fulfill all the criteria for grade E.
F	0-44	Very unsatisfying	The student does not fulfill most of the criteria for grade E.