

PHYSICS 331 ADVANCED CLASSICAL MECHANICS
Final Exam Preparation

The following are in addition to the Test 1/2/3 Preparation notes. In preparation for the final examination, you should be able to:

- Know how to write down equations of motion for coupled systems, both in equation and matrix form.
- Be able to extract the characteristic frequencies (of the normal modes) and obtain descriptions of the normal modes.
- Be familiar with the use of Taylor series expansions, etc. for simplifying calculations/making approximations.
- Know how to ascertain the stability of a system and to characterise it.
- Be able to extract Lagrangians and use Lagrange's equations to obtain information. Also, be able to use undetermined multipliers.
- Be familiar with chaotic and non-chaotic behaviour in systems that are non-linear or can be described by mappings, i.e., relating $x_{(n+1)}$ to x_n .
- Understand the definition and consequences of central forces.
- Be able to work with orbital motions, etc.