From an email by Prof. J. Michael Shull in the APS department here at CU:

Physics Requirements for Astrophysics

So many students have asked about this issue that I decided to write up a single, standard response. Our graduate program in Astrophysics & Planetary Sciences involves a rigorous set of coursework (11 courses and 4 seminars), many of which expect students to enter with a strong math and physics background. If your background is in Engineering, that's great experience, but you also need to pick up the math/physics to succeed here.

We like the see the following undergrad upper-level courses:

- Classical (Analytical) Mechanics
- Electromagnetism 1 & 2
- Quantum Mechanics 1 & 2
- Thermal Physics and/or Stat Mechanics
- Physics Labs (typically 2-3 years).

In addition, many students benefit from taking undergraduate physics electives (these are option, not required):

- Condensed Matter (solid-state) physics
- Modern Physics (atomic, nuclear, particle)
- Relativity & Cosmology

For mathematics, we prefer that students have taken:

- Calculus 1, 2, 3 (through vector & multivariate calculus)
- Ordinary Differential Equations
- Matrix Theory and Linear Algebra

Strongly encouraged:

- Intro to Partial Differential Equations
- Transform methods (Fourier, Laplace)
- Complex Variables
- Mathematical Physics (wave, diffusion equations, etc.)
