

Studying Astronomy and related sciences.

By Lee Russell

This short article is intended to provide an insight into some of the courses offered by the Open University (OU) which may be of interest. I am now in the final year of a BSc (Hons) which is weighted towards courses with an Astronomical or Planetary Science element. I will not attempt to describe the particular manner in which study of these courses can count towards a degree; interested parties should follow that up for themselves (a good starting point would be the OU website at <http://www.open.ac.uk>). These courses can be studied in isolation just for “fun” and anyone is eligible to register for them.

The most applicable course offered is (currently) entitled “Astronomy and planetary science” (S281). In its current format the course is presented through four study texts and an accompanying book of astronomical images (‘Images of the Cosmos’). The four study texts are “The stars and the interstellar medium”, “The Planets”, “Galaxies” and “Cosmology”. The first book starts by looking at the properties of the Sun, then moves on to consider the measurable properties of other stars. The story of stars’ life cycles is then developed before the nature of the interstellar medium is discussed. As one might expect, the second book takes a fairly thorough look at the origin, composition and evolution of the planets in our solar system. The book on galaxies considers the structure of the Milky Way and other galaxies (paying attention to active and starburst galaxies) as well as their distribution and motions through space. As one might expect, the final book on Cosmology is in many ways the most difficult to get to grips with. The first part considers the Big Bang theory, the second develops those ideas by looking at concepts from General Relativity.

S281 is not a course in observational astronomy, although there are some practical projects to complete. It does not make any exceptional assumptions about students’ academic backgrounds. However, some basic mathematical ability and understanding of physics is required. But please do not let these comments put you off, the course is very accessible. The authors include noteworthy names like John Zarnecki (formerly of the University of Kent and involved in the Cassini mission to Saturn), Jocelyn Bell Burnell (joint discoverer of radio pulsars with Anthony Hewish), Dave Rothery (Geologist and author) and Colin Pillinger (OU scientist working on Beagle).

The other course which I have studied that falls entirely within the astronomical sphere is entitled “Space, Time and Cosmology” (S357). It begins by developing ideas of what space and time are from first principles. These ideas are used to help us understand Einstein’s Special and General theories of Relativity. The course ends by examining what we would consider to be Cosmology : the Big Bang and theories for the evolution of the Universe. The OU does not teach the requisite maths to handle General Relativity calculations, so this course presents those ideas by analogy. Even so, it is a difficult course to study, requiring a fair degree of mathematical ability. There is a diagnostic quiz that you can send off for, which will show if you are ready for the course. Leaving those warnings aside, it is an excellent introduction to Cosmology.

Two other courses may interest those of us interested in the Planets : “Geology” (S260) and “How the Earth Works” (S267, essentially a course of geophysics). I have found that my study of S260 has helped me to interpret images and press releases on Mars and from the Galileo mission. S267 spent a lot of time developing ideas on the Earth’s structure and composition and how these evolve through time, before ending with a block dedicated to “Planetary Evolution”. Again, I have personally found this very useful in understanding the science returned by satellites. Both courses are reasonably accessible and do not need any extensive mathematical knowledge (although a basic background in chemistry would help with S267).

I should point out that the OU is presenting a new course entitled “The Energetic Universe” (S381) in 2002. According to their advertising it is a course of astrophysics. I cannot offer any thoughts on its content but mention it here for completeness.

I hope this has been a useful summary of what the OU offers for those of us with an interest in the night sky. Study with them can be demanding and I would recommend that anyone considering taking a course investigates whether they could commit the necessary time to it. For me, it has been very satisfying and has allowed me to look at the sky with my eyes a bit more open.