

SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)  
Education Outreach (3)

Author: Mr. Massimo Sabbatini  
European Space Agency (ESA), The Netherlands, massimo.sabbatini@esa.int

DISTANCE LEARNING FOR ESA HUMAN SPACEFLIGHT.

**Abstract**

Esa has developed a number of techniques and content that have been successfully pioneering the concept of distance learning applied to various scientific disciplines.

The two lecture series in Astrobiology in academic years 2006-07 and 2007-08 were quite innovative in their scope and purpose. The study of the origin, evolution and distribution of life in the universe. In this endeavour, scientists from a wide variety of disciplines are involved, such as astronomy, planetary research, organic chemistry, palaeontology and the various sub disciplines of biology including microbial ecology and molecular biology. Space technology plays an important part by offering the opportunity for exploring our solar system, for collecting extraterrestrial samples, and for utilising the peculiar environment of space as a tool. However, because of the multidisciplinary character of astrobiology the full expertise in astrobiology is not always available at a single university thereby rendering it difficult to organize a comprehensive course in astrobiology. Methods: ESA has provided the infrastructure, tools and staff for setting up each lecture as a live television production, broadcasting it in real-time to all other participating university sites and to the ESA's Erasmus Centre. The sites were interconnected thereby allowing direct intervention by each teacher and an interactive question and answer period after the lecture. The video-recorded lectures were converted into the streaming Internet format providing individual access of the participants to the lectures at any time as video-on-demand session. Results: In a pilot study, an Astrobiology Lecture Course Network has been established, involving 4 European universities that were interconnected via direct television satellite, videoconference systems, e-learning Internet tools and a streaming Internet video network provided by ESA. The lectures were part of the university curricula with the possibility of getting European credit points for the students. The lectures were recorded and are available at the ESA web site: <http://www.spaceflight.esa.int/exobio> under Teaching“. The frame of lectures reach from the origin of the universe through prebiotic chemistry and origin of life and its adaptation to extreme environments to search for life in the Solar System and the technology required for astrobiology missions. The lectures are also published (Horneck and Rettberg, 2007). Conclusions: This pilot study of an Astrobiology Lecture Course Network has raised increasing interest among European universities and a new series in Space Medicine has been proposed for 2009-10.