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京都大学宇宙総合学研究ユニットの活動

**On the activities of Unit of Synergetic Studies for Space,
Kyoto University**

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1. Introduction

In Kyoto University, a wide range of space-related research (e.g., astrophysics, aerospace engineering, space medicine, etc.) has been performed and good results have been accumulated due to the large number of different departments and their broad research interests. Unit of Synergetic Studies for Space (USSS) was established in 2008 and now consists of 2 full-time research staffs, and over 100 staff members from 24 divisions (in the fields of sciences, engineering, informatics, letters, law, and so on; see Fig. 1 for details). Since its establishment this unit continues to develop this supply of talent and to broaden the scope of the research. On the basis of the common research theme, we aim at exploring and developing new fields of space study, by making full use of inter-departmental cooperation and taking advantage of the different areas of interest in each department.

USSS aims to bring these areas together in the following ways:

(1) Cooperation both inside the university and with outside bodies in theoretical research, satellite construction (for X-ray astronomical, solar and terrestrial magnetospheric observation), rocket and balloon-borne observation and experiments in astronomy and aerospace engineering.

(2) Development of inter-disciplinary study, including fields such as space medicine, life science, pharmacy, agriculture, information and computer science, energy science and environmental science, as well as subjects based in human and social sciences (like philosophy, anthropology, law, politics, and economics).

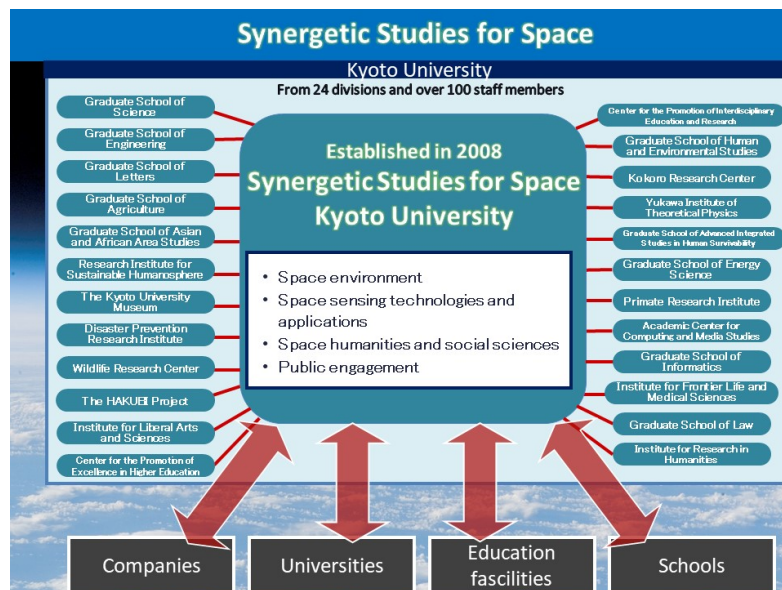


Fig. 1. Structure of USSS. Its members are from 24 diverse divisions of Kyoto University.

2. New activities on “Space Ethics”

The most recent movement of USSS is that we are going to start a new education program based on the space ethics. This has been made possible through long-term extensive research experience on the so-called “space ethics” in USSS. A good summary is found in the book (ref. 1). The background of this study is as follows: It has been announced with great curiosity that NASA (and JAXA collaboration with NASA) has the plan to send human beings to the Moon and to the Mars. Also, now is the time, when not a few private companies plan space sight-seeing tours for the ordinary citizen. Going to the space is not only restricted to specialized persons (i.e. astronauts) but open to (almost) everybody in the world. We then have serious concerns: that is, a new kind of problems related to ELSI (Ethical, Legal and Social Issues) may arise due to such a popularization of the space. We need deep consideration on these issues before space tours become widely available. This is a new research field, in which mutual collaboration, intense discussion between those who working on sciences and those on social sciences. Prompted by such rapid developments we have decided to construct a new education system to study space ethics.

The education curriculum that we propose consists of (1) series of lectures, (2) exercise, and (3) research (see Fig.2).

- (1) Lectures on the basic knowledge about the space, astronomy and the ethics of science.
- (2) Exercises to acquire skills to solve practical problems based on the critical thinking.
- (3) Professional research on each own subject selected by a student.

The education system will be constructed for science-major, and literature-major undergraduate, and postgraduate students, respectively. Using this education course, students who are studying aerospace engineering, for example, can learn about basics and applications of space ethics, while those students who are studying ethics or sociology can have opportunities to study most recent results of the scientific research on space. We are now in the stage of building up a concrete education plan and will call for students to join in the Spring 2022.

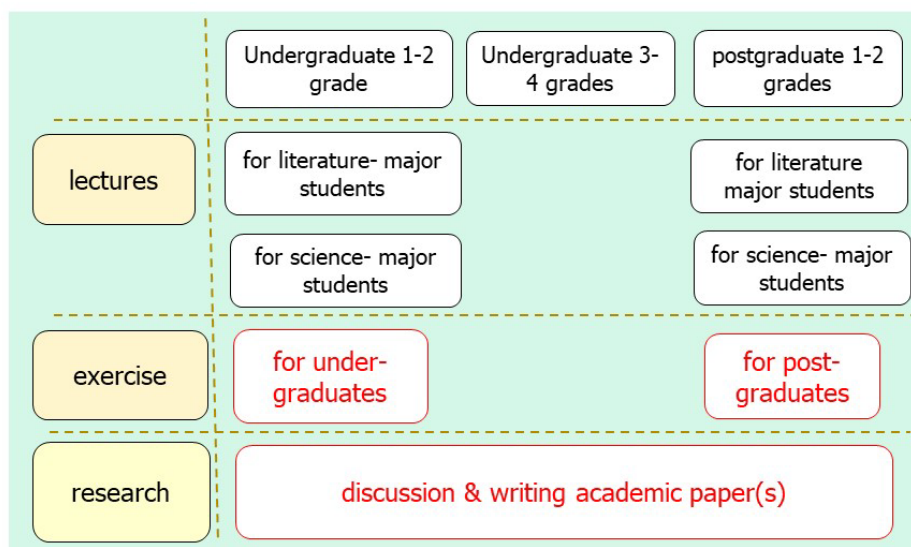


Fig. 2. New education curriculum to study the space ethics

References

- 1) T. Iseda et al. (ed.) “Space Ethics” (Showado Shuppan , 2018, in Japanese)



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