

SHIZUOKA UNIVERSITY

Faculty of Science

A new program

"Creative Science Course: Global Innovation"

Create yourself



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A new program, “Creative Science Course: Global Innovation”

The Faculty of Science, Shizuoka University, will start a new program, “Creative Science Course: Global Innovation” for undergraduates program from April 1, 2016, which aims to encourage students to develop their innovative and global standpoints in the study of science. The students of this program will take lectures and complete exercises using more English than other students, and the students of this program will take lectures offered by different Departments (Mathematics, Physics, Chemistry, Biological Science, Geosciences) during their first year. Then they decide their major and join a laboratory of one of the program’s professor or another appropriate professor belonging to the Department during the second year. Through the intensive study in English and other active opportunities, students shall be encouraged to think globally with a scientific mind.

We welcome students who:

- want to study science, but have not decided their subject yet.
→You learn some subjects during the first year and then decide your speciality.
- who want to develop their vision globally and may consider a job outside Japan.
→We offer some lectures in English and some special programs to develop your scientific ability in English intensively.
- who want to learn the foundations of science, and apply them to various social fields.
→Learn how to solve questions and problems.

This is a challenge for the Faculty, thus we will continuously check the progress of the program carefully and evaluate how to further develop the entire educational program in the year to come. In order to do this we are inviting experts from outside of the university based on their highly-evaluated experiences in society.

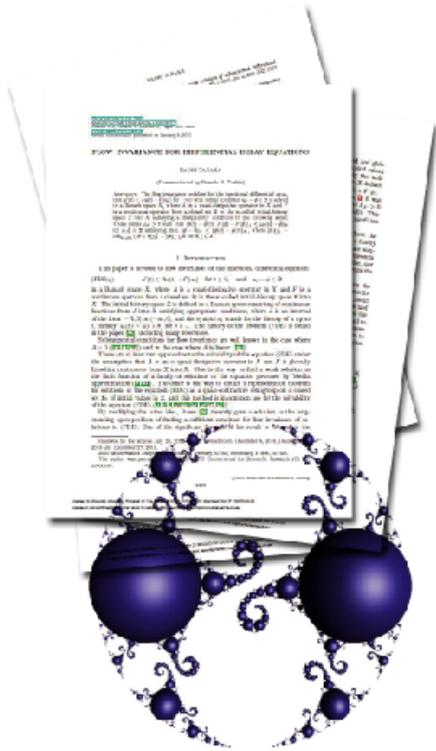
Mathematics

[Research Topics]

In the Department of Mathematics, we study the following broad range of mathematical sciences: Analysis (studying real and complex analysis and differential equations describing natural phenomena), Algebra (studying arithmetic rules such as addition and multiplication), Geometry (studying and classifying various shapes and spaces), Probability (studying the likeliness of occurrence), Mathematical Logic (studying logical inference and infinity combinatorics)

[Education]

Our curriculum provides both lectures in which one can learn various areas of mathematics, and recitations in which one can practice solving problems and presenting solutions in class. In the first year, we also provide a course in which one can learn how to use mathematical symbols and how to write proofs, which shall bring one to smooth adjustment to college-level mathematics. By the third year, one can master foundations of modern mathematics via lectures and recitations. In the fourth year, one can intensively study a specialty of one's choice via seminars.



Physics

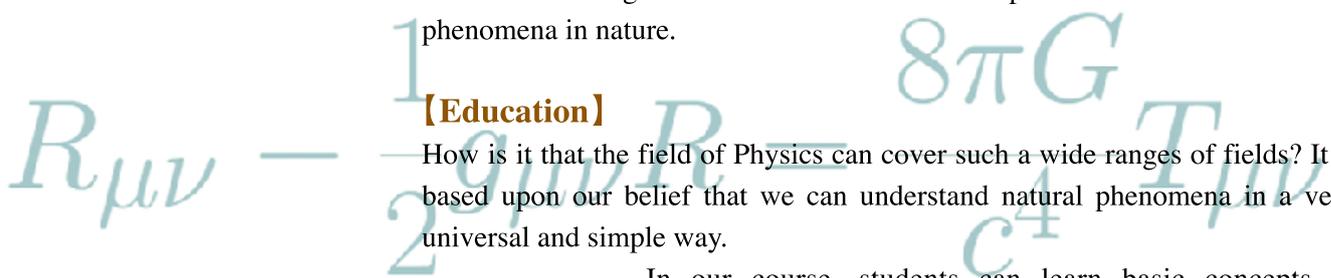
[Research Topics]

The Department of Physics is conducting the research of materials and their properties. We cover a wide range of fields, from subatomic physics to condensed matter and biophysics. It is also our main objective to expand human knowledge and create universal concepts that connect to various phenomena in nature.

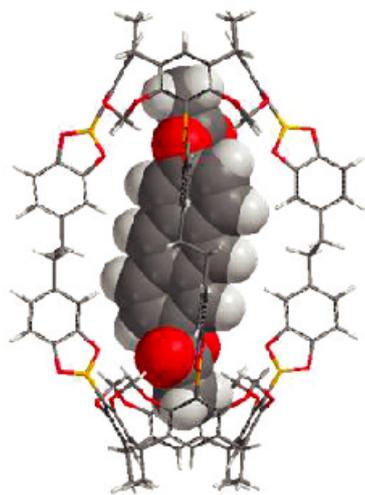
[Education]

How is it that the field of Physics can cover such a wide ranges of fields? It is based upon our belief that we can understand natural phenomena in a very universal and simple way.

In our course, students can learn basic concepts of mechanics, electromagnetics and thermodynamics. Afterwards, they proceed to advanced topics such as quantum mechanics, statistical mechanics and the theory of relativity. We also emphasize experimental excises that help to develop the techniques and (learning) skills of the students.



Chemistry



【Research Topics】

The faculty specialize in the four different fields of chemistry such as; “Organic Chemistry”; “Inorganic Chemistry”; “Biochemistry”; and “Physical Chemistry”. Our research fields extend from the synthesis of supramolecules, metal complexes, and other chemical substances, and studies of their reactivity and functions.

Function of biomolecules, structures of unstable molecular species and molecular clusters, and the theoretical analysis of various molecular reactions are also studied. The research subject includes safe use of radioactive substances, conducted by faculty of the Radioscience Research Laboratory.

【Education】

In this course, students learn structures, compositions, properties and activities of substances and how the substances react to form new substance with emphasis on the underlying theories. In particular, the students also learn various analytical techniques and skills through the intensive experiment in this course. Through “the freshman seminar” held early in the first year, the students learn internationally recognized researches conducted by faculty at this university. In order to graduate this course, students spend a year in a laboratory where they receive intensive guidance for research by faculty of the department.

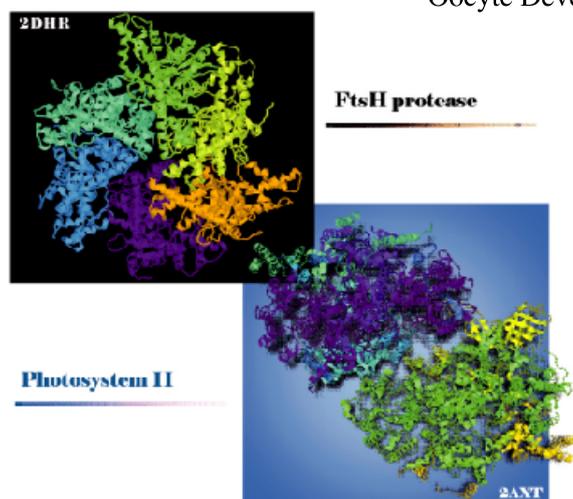
Biological Science

【Research Topics】

In the Department of Biological Science, we investigate the mechanisms of the following biological phenomena: Photosynthesis, Optical Response, Plant Taxonomy, Development and Differentiation, Endocrine Regulation, Endocrine Disruptors, Animal Physiology, Neurobiology, Brain Science, Cell Structure and Function, Morphogenesis, Regenerative Therapy, Nitrification and Denitration, Cell Division, Cellular Signaling, Meiotic Cell Cycle, and Oocyte Development.

【Education】

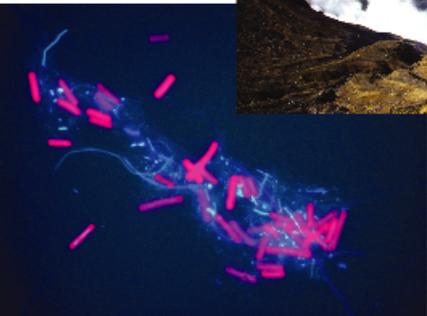
Experimental courses, practicals and seminars are set as the most important schedule in curriculum. Students will be educated in practical research techniques and the required knowledge for such. Topics in experimental courses span from genes to whole organisms. This education will provide the skills to do basic research and applied biotechnologies.



Geosciences

【Research Topics】

The Institute of Geosciences consists of two academic courses: the Geodynamics Course and Bioenvironmental Science Course. In the Geodynamics Course, earthquakes, volcanic activity and diastrophism caused by Earth's energy, and the origin of rocks and geological structures are researched. In the Bioenvironmental Science Course, interactions between the environment of the Earth's surface and biodiversity are investigated from the viewpoints of Marine Chemistry, Paleoenvironment, Paleontology, and Environmental Microbiology. Recently collaborative research with the Center for Integrated Research and Education of Natural Hazards has been launched.



【Education】

Education begins from comprehensive lectures on the Geosciences through English textbooks and basic field practicals and proceeds to advanced lectures and practicals following the leading edge sciences. In each laboratory, individual guidance is practiced in perusing and introducing of original papers in English and field research. High scientific originality is expected in each graduate thesis. The thesis is sometimes presented by undergraduate students at scientific meetings.

Radioscience Research Laboratory

【Research Topics】

Our research activities are focused on radiation and radioisotopes including their safe usage. For example, we study how radioactive materials migrate in an environment and what effect they have on that environment.

One of the major subjects we try is how do we create future energy producing system using hydrogen. In order to protect radioactive environmental problem, we also investigate what kind of materials must be appropriate for that purpose and examine how radioactive hydrogen behaves in various materials.

【Education】

Students can conduct their graduation research using radiation and radioisotopes at our laboratory. We perform lectures about physics, chemistry and biology in conjunction with radiation for the students of the faculty of science, and train them about radiation management and measurement technique. These lectures and trainings can help the students to perform their research and allow them to acquire knowledge and ability to pass the national examination of "Radiation Supervisor." The qualification is required in various institutions and companies which make use of radiation and radioisotopes.



