School of Science

Educational Objectives

In line with the Educational Objectives of the University of Osaka, the School of Science offers education on science, a discipline that underlies all natural sciences in the pursuit of truth and that is at the basis of today's science and technology. Natural science owes much of its progress to the efforts of people who were genuinely fascinated by the beauty of Nature, without considering the potential of science and technology to generate profits. Science, with such a principle and spirit, is the basis of social development and the cultural and intellectual heritage of humanity. Education at the School of Science aims to help students learn the principle and spirit of science by guiding them to achieve the following objectives.

Advanced specialized knowledge and outstanding academic expertise

Acquire knowledge, from basic to advanced levels, to understand research results in various areas of natural sciences; and develop scientific thinking and master scientific methodologies through the process of acquiring the above knowledge.

Broad-based knowledge and critical thinking

Develop flexible thinking backed by an extensive understanding of natural sciences in general gained through studies focusing on the characteristics of natural sciences, and nurture a sharp intuition towards nature and appropriate judgment.

International mindset

Develop individuals with the ability to act globally as researchers, R&D personnel, or teachers at universities, public agencies, or companies.

Design prowess

Acquire profound scholarly knowledge as well as scientific thinking and methodologies to discover new problems by pursuing questions with curiosity, and work in an interdisciplinary manner to solve the problems.

Individual educational objectives

The School of Science offers an educational program tailored to students with a special interest in research, to train them as competent researchers from earlier years.

Degree Awarding Policy (Diploma Policy)

Under the Diploma Policy of the University of Osaka and guided by the words of Dr. Hantaro Nagaoka, the first president of the University of Osaka and the founder of the School of Science, "*Souhaku wo namuru nakare* (Be always creative)," the School of Science confers a Bachelor's Degree in Science on individuals who have learned the essence of science in the pursuit of truth in the field of natural sciences, not formally but in substance, and who have achieved all the following objectives by studying subjects offered by the School of Science.

Advanced specialized knowledge and outstanding academic expertise

Acquire knowledge, from basic to advanced levels, in the field of one's specialty and develop the ability to understand the essence of research in the field.

Acquire the practical ability to conduct research based on specialized knowledge in the field of one's specialty.

Broad-based knowledge and critical thinking

Acquire an extensive understanding of disciplines in science in general, including mathematics, physics, chemistry, biology and geology.

Acquire broad-based knowledge and critical thinking to communicate with people with different specialties.

International mindset

Acquire the ability to communicate in English or another foreign language to play an active role in global society.

Acquire sufficient foreign language proficiency to understand research results achieved by foreign researchers.

Design prowess

Acquire the ability to organize and present one's research.

Acquire the ability to apply basic knowledge in science for practical purposes.

Individual educational objectives

Acquire an excellent understanding of science and practical skills. (This objective applies to students enrolled in the Science Honors Program.)

Teaching and Learning Policy (Curriculum Policy)

In line with the Curriculum Policy of the University of Osaka, the School of Science offers a curriculum consisting of: Liberal Arts education subjects to acquire broad-based knowledge and critical thinking to communicate with people with different specialties; Global Literacy education subjects to develop foreign language literacy and an international mindset to play an active role in global society; and Academic Major education subjects to acquire an understanding of disciplines in science in general, knowledge in one's specialty from basic to advanced levels, practical skills and design prowess. The academic performance of each student in the Liberal Arts, Global Literacy and Academic Major education subjects is strictly evaluated before credits are granted. The objectives of these subjects are as outlined below.

Principles of Curriculum Design

Liberal Arts education subjects: In the first year, students mainly study these subjects to acquire broad-based knowledge and critical thinking to communicate with people with different specialties. After acquiring a certain degree of specialized knowledge, students study advanced Liberal Arts education subjects also in later years to acquire broad-based knowledge and critical thinking in specialties other than their own.

Global Literacy education subjects: Students study these subjects, mainly foreign languages, in the first and second years to develop foreign language literacy and an international mindset to play an active role in global society. In later years, students also study advanced Global Literacy education subjects to enhance foreign language literacy and communication skills to understand more specialized topics.

Academic Major education subjects: Students study professional basic education subjects in earlier years to acquire an extensive understanding of disciplines in science in general, including mathematics, physics, chemistry, biology and geology, and in later years, study more specialized subjects in their respective divisions to acquire knowledge in their specialties from basic to advanced levels, develop the ability to understand the essence of research in their specialties, and practical research skills based on the ability.

Graduation Research (Special Research): In the fourth year, students are assigned to laboratories where they conduct graduation research under one-on-one guidance by their instructors. In this process, they acquire more advanced practical research skills, as well as design prowess to apply the knowledge in science gained in earlier years for practical purposes and the ability to organize and present their research. The School of Science also offers the Science Honors Program, a special educational program that allows students with a special interest in research to take the Honors Seminar to enhance their research skills from earlier years.

Contents and Methods of Education

Students study "A Door to Academia," basic Liberal Arts education subjects, advanced Liberal Arts education subjects, Health and Sports education subjects and Advanced Seminar in Liberal Arts education, and multilingual education subjects and advanced Global Literacy education subjects in Global Literacy education. In Academic Major education, students are first guided to acquire an extensive understanding of disciplines in science in general, including mathematics, physics, chemistry, biology and geology by studying professional basic education subjects, and then systematically study more specialized subjects offered by each division from basic to advanced levels. Academic Major education offers a range of laboratory work and seminar- and practical training-based subjects to enable students to learn specialized knowledge not superficially, but in a manner that develops deep insights into the essence of such knowledge, and to develop practical skills to apply the knowledge gained in lecture-based

subjects for practical purposes.

Academic Performance Evaluation Method

The academic performance of students is strictly evaluated according to the methods specified in the syllabus of each subject. To be more specific, academic performance is evaluated on the basis of examinations, quizzes, reports and class attitude for lecture- and exercise-based subjects; class attitude and reports for laboratory work and practical training; and presentations made at seminars and academic papers for graduation research.