

Systemized scientific knowledge

Frontier science lecture

We had three lectures in frontier fields of science in 2015.

“Statistical sciences in Biomedical studies- Recent findings from statistical data analyses”

Ohtaki, Megu (Department of Environmetrics and Biometrics, Research Institute for Radiation Biology and Medicine, Hiroshima University)

“Understanding the interaction between catchment and coast in order to make use of ecosystem services in human society”

Shoji, Jun (Graduate School of Biosphere Science, Hiroshima University)

Pioneer studies in science

The students visited researchers and postgraduates in the field of natural science and learned how to analyze and interpret the data they obtained during experiments. This experience taught the students what attitude they should cultivate as future researchers.

“Field work program for understanding of a formation process of igneous rocks and effect on topography in Motoujina, Hiroshima”

Yoshidomi, Kenichi (Hiroshima University Graduate School of Science)
Mitsushima, Hironao (Earth Museum Motoujina, Nature observation guide association)



“Energetic Universe Probed by X-ray and Gamma-ray”

Fukazawa, Yasushi (Graduate School of Science, Hiroshima University)



“Behavioral and physiological responses to environmental alcohol in zebrafish”

Yoshida, Masayuki (Graduate School of Biosphere Science, Hiroshima University)

“The reason why honeycomb is composed of regular hexagons”
“A study on the rolling of Tetra-helix”
“Triangles, squares, pentagons,....., circles”

Agaoka, Yoshio (Graduate School of Science, Hiroshima University)

“Building and measuring a prototype of Solar Cells (Basic experiment in Nanodevice System)”

Yokoyama, Shin (Research Institute for Nanodevice and Bio Systems, Hiroshima University)



“Synthesis of methyl m-nitrobenzoate and instrumental analysis (Experiment in Basic Organic Chemistry)”

Yamamoto, Yosuke (Graduate School of Science, Hiroshima University)

Science project tour

We visited the following places in 2015

- RIKEN Harima Branch (SPRING-8, SACLA)
- RIKEN Advanced Institute for Computational Science (“K computer”)
- Integrated Research Center of Kobe University (π-CAVE)
- RIKEN Kobe Branch (Center for Developmental Biology)
- Kobe University Rokkodai Campus (Graduate school of Engineering, Graduate School of Science, Research Center for Urban Safety and Security)



At Kobe University



“K computer”

SSH exchange program in Hiroshima

We had exchange programs with other Super Science High schools in Hiroshima. (Hiroshima Prefectural Hiroshima Kokutaiji High School, Hiroshima Prefectural SAIJO Agricultural High School, Yasuda Girls High School)



SSH Research project interim report meeting



Poster presentation conference hosted by Hiroshima Prefectural Hiroshima Kokutaiji High School



At Hiroshima Prefectural SAIJO Agricultural High School

Inquiry of Science I · Inquiry of Science II

We conduct lessons to develop students’ scientific thinking, problem solving skills, and abilities for integrated decision making. In particular, lessons on Inquiry of Science II are given not only by math and science teachers but by teachers of all other subjects. Some of the lessons are held at the junior high school as well.



Special subject: “Mathematical Modeling and Analysis”

① Basic statistics concerning data description and reduction

Students learned how to analyze data, and how to predict phenomena based on the collected data.

② Reproduction and analysis of natural phenomena

Students learned Lotka-Volterra equations as a model to express the periodic change of population. They used this model to express the periodic change of tuna fish population, and discussed the effectiveness of releasing young tuna fish.

They also learned a cellular automaton model to simulate various traffic situations, and discussed how to solve traffic congestion.



Students are required to write a report at the end of each term. After writing the report, they are encouraged to take an active part in discussion and state their opinions based on their views presented in the reports.

Research project



Research project in 2015 (3rd grade)

Physics	The structure of bubbles in bulk
	Development of an inertial electrostatic confinement device equipped with a convergent electrostatic lens
	Physics consideration of best working conditions of a broom
Chemistry	The developments of stable methods for the extraction of chlorophyll
	Generation of ozone by electrolysis
	The effect the heated lipids have on the hydrolysis of lipids by lipase
Biology	Concentration changes of a frozen drink when it melts
	Effect of alarm substance and fear conditioning of zebrafish
Mathematics	Mathematical analysis of chord progression
	Mathematical simulation of taking refuge

Main awards in 2015

The 59 th Japan Student Science Award: School award
The 59 th Hiroshima Prefecture Science Award: Special prize and semi-special prize
As above: Hiroshima Prefectural Governor Award (Award for school)
The 86 th Annual Meeting of the Zoological Society of Japan: Award of excellence
The 5 th Meeting of MIMS mathematical science based on modelling and analysis (meeting for presenting research paper by high school students): Award of excellence
The 10 th Tomonaga Shinichiro Memorial Buds of Science Prize: Prize for effort
The 17 th IEF Hiroshima Section Student Symposium: Excellent high school student presentation award
Hiroshima Prefecture Meeting for presenting research paper by high school students: Award of excellence

Prizes at conferences and contests (2015)



The 5th MIMS meeting: Award of excellence