

Curriculum Policy of the Faculty of Science

The educational and research objective of the Faculty of Science, Kobe University is to contribute to social advancement by deepening understanding of nature through the study of various fundamental areas in natural science.

In addition to providing a wide range of general knowledge as well as specialized knowledge in its respective fields, each department sets its own goals for human resource development and education and research.

In order to achieve these goals, each department has implemented its own curriculum which was designed as in the following tables.

Department of Mathematics

| Aims of the programme | 1st year, 1st semester | 1st year, 2nd semester | 2nd year, 1st semester | 2nd year, 2nd semester | 3rd year, 1st semester | 3rd year, 2nd semester | 4th year |
|--|---|--|--|---|---|--|--|
| Acquire a high quality education | Liberal Education Introduction to Computer Literacy Sports and Fitness Course I | Liberal Education Health Sciences Sports and Fitness Course II | Liberal Education | Liberal Education | | | |
| Develop excellent communication skills | First Foreign Language Second Foreign Language | First Foreign Language Second Foreign Language | First Foreign Language Second Foreign Language | Second Foreign Language | | | |
| Obtain a wide base of knowledge for chosen specialities | Physics C1 Basic Inorganic Chemistry Biology I | Physics C2 Physics C3 Introduction to Computer Science | Physics C4 | | | | |
| Understand the introductory theories of mathematics | Calculus 1 Linear Algebra 1 Introductory Topics in Mathematics | Calculus 2 Linear Algebra 2 Beginner's Seminar | | | | | |
| Understand both the introductory and more specialized theories of analysis | Introduction to Analysis I | Introduction to Analysis II | Analysis III Analysis IV | Analysis V Function Theory and Exercises | Analysis VI and Exercises Complex Analysis | Analysis VII Analysis VIII | Functional Equations I Functional Equations II Functional Analysis I Functional Analysis II Topics in Analysis |
| Understand both the introductory and more specialized theories of algebra and geometry | | Elements of Mathematics I | Elements of Mathematic II and Exercises Linear Algebra III Algebra I and Exercises | Algebra II Geometry I and Exercises | Algebra III Geometry II and Exercises | Algebra IV Geometry III Geometry IV | Algebra V Algebra VI Geometry V Geometry VI Topics in Algebra Topics in Geometry |
| Understand both the introductory and more specialized theories of applied mathematics | | | | | | Probability Theory I Computational Mathematics I and Exercises Representation Theory I | Probability Theory II Discrete Mathematics I Discrete Mathematics II Computational Mathematics II Computational Mathematics III Representation Theory II Applied Analysis Topics in Applied Mathematics |
| Deeply explore a particular specialized field of mathematics and its applications | | | | | | | Topics in Mathematics Special Lecture Seminar |

Department of Physics

| Aims of the programme | 1st year, 1st semester | 1st year, 2nd semester | 2nd year, 1st semester | 2nd year, 2nd semester | 3rd year, 1st semester | 3rd year, 2nd semester | 4th year, 1st semester | 4th year, 2nd semester |
|--|--|--|--|--|--|--|--|------------------------|
| Acquire a high quality education | Liberal Education Introduction to Computer Literacy Sports and Fitness Course I | Liberal Education Health Sciences Sports and Fitness Course II | Liberal Education | Liberal Education | | | | |
| Develop excellent communication skills | First Foreign Language Second Foreign Language | First Foreign Language Second Foreign Language | First Foreign Language Second Foreign Language | Second Foreign Language | | | | |
| Obtain a wide base of knowledge for chosen specialities | Calculus 1 Linear Algebra 1 Basic Inorganic Chemistry Basic Organic Chemistry Biology I Introduction to Earth Science | Calculus 2 Linear Algebra 2 Basic Physical Chemistry Introduction to Computer Science | Analysis III Earth Material Science Physics Laboratories | | | | | |
| Acquire introductory knowledge of physics and mathematical methods systematically | Modern Physics Mechanics I Exercises in Mechanics I Basic Mathematical Methods in Physics | Mechanics II Exercises in Mechanics II Electromagnetics I Exercises in Electromagnetics I | Electromagnetics II Exercises in Electromagnetics II Analytical Dynamics | Wave Physics Thermal and Statistical Physics Mathematical methods in Physics I Exercises in mathematical methods in physics I | Mathematical methods in physics II Exercises in mathematical methods in physics II | | | |
| Acquire basic knowledge of modern physics to understand the structure and function of matter | | | | | Quantum Mechanics I Exercises in Quantum Mechanics I Statistical Physics I Exercises in Statistical Physics I | Quantum Mechanics II Exercises in Quantum Mechanics II Statistical Physics II Exercises in Statistical Physics II | Electrodynamics Quantum Mechanics III | |
| Acquire knowledge of modern physics to develop advanced skills | | | | The Theory of Relativity | | Solid State Physics I Astrophysics General Theory of Relativity Nuclear Physics | Solid State Physics II Elementary Particle Physics Special Lecture on Modern Physics | |
| Develop experimental techniques in physics and their applications through lectures and laboratory work | | | Experimental Physics I Information Science for Physics | Physics Laboratories I | Physics Laboratories II | Experimental Physics II Physics Laboratories III | | |
| Obtain the ability required for independent research in physics | | | | | | | Senior Thesis A (Experimental) Senior Thesis B (Theoretical) | |

Department of Chemistry

| Aims of the programme | 1st year, 1st semester | 1st year, 2nd semester | 2nd year, 1st semester | 2nd year, 2nd semester | 3rd year, 1st semester | 3rd year, 2nd semester | 4th year, 1st semester | 4th year, 2nd semester |
|--|--|--|---|--|--|--|----------------------------|------------------------|
| Acquire a high quality education | Liberal Education Introduction to Computer Literacy Sports and Fitness Course I | Liberal Education Health Sciences Sports and Fitness Course II | Liberal Education | Liberal Education | | | | |
| Develop excellent communication skills | First Foreign Language Second Foreign Language | First Foreign Language Second Foreign Language | First Foreign Language Second Foreign Language | Second Foreign Language | | | | |
| Obtain a wide base of knowledge for chosen specialities | Calculus 1 Linear Algebra I Physics B1 Physics C1 Biology I Basic Historical Geology | Calculus 2 Linear Algebra 2 Physics B2 Physics C2 Physics C3 Introduction to Computer Science | Physics B3 Physics C4 Physics Laboratories | Laboratory Chemistry Laboratory Exercises in Biology | | | | |
| Obtain fundamental knowledge of chemistry | Introduction to Physical Chemistry Introduction to Inorganic Chemistry Introduction to Organic Chemistry | | | | | | | |
| Acquire a wide base of knowledge and experimental techniques of chemistry | | Chemical Thermodynamics I Inorganic Chemistry I Organic Chemistry I | Chemical Thermodynamics II Inorganic Chemistry II Organic Chemistry II Quantum Chemistry I | Quantum Chemistry II Inorganic Chemistry III Analytical Chemistry I Organic Chemistry III Biochemistry I | Laboratory Chemistry I | Laboratory Chemistry II Exercise on Computational Chemistry | | |
| Develop abilities of problem recognition and resolution | | | | Exercise on Chemical Thermodynamics Exercise on Quantum Chemistry | Exercise on Organic Chemistry | Exercise on Inorganic and Analytical Chemistry | Laboratory Research Course | |
| Develop motivation for challenging unclarified issues of chemistry | | | | | Chemical Dynamics III Chemical Thermodynamics III Quantum Chemistry III Analytical Chemistry II Solid State Chemistry Structural Organic Chemistry Biochemistry II | Surface Chemistry Molecular Spectroscopy Solution Chemistry Synthetic Organic Chemistry Biochemistry III | | |
| Develop creative abilities in research, and an interdisciplinary point of view | | | | | | | Laboratory Research Course | |

Department of Biology

| Aims of the programme | 1st year, 1st semester | 1st year, 2nd semester | 2nd year, 1st semester | 2nd year, 2nd semester | 3rd year, 1st semester | 3rd year, 2nd semester | 4th year, 1st semester | 4th year, 2nd semester |
|---|--|--|--|--|--|---|------------------------|------------------------|
| Acquire a high quality education | Liberal Education Introduction to Computer Literacy Sports and Fitness Course I | Liberal Education Health Sciences Sports and Fitness Course II | Liberal Education | Liberal Education | | | | |
| Develop excellent communication skills | First Foreign Language Second Foreign Language | First Foreign Language Second Foreign Language | First Foreign Language Second Foreign Language | Second Foreign Language | | | | |
| Obtain a wide base of knowledge for chosen specialities | Introduction to Calculus Calculus 1 Introduction to Linear Algebra Linear Algebra 1 Physics B1 Basic Inorganic Chemistry Basic Organic Chemistry Basic Historical Geology | Physics B2 Basic Physical Chemistry Introduction to Computer Science | Physics B3 Mineralogy Petrology and Geochemistry Physics Laboratories | Chemistry Laboratory | Historical Geology Laboratory | | | |
| Acquire fundamental knowledge of biology ranging from the molecular and cellular levels to the individual level | Principles of Cell Biology | Principles of Biochemistry Principles of Plant Physiology | Principles of Developmental Genetics Principles of Molecular Biology Principles of Animal Physiology | | | | | |
| Acquire fundamental knowledge of biology ranging from the individual level to the species and ecosystem levels | Principles of Ecology | Principles of Evolutionary Systematics Field Biology, I Laboratory and Field Exercises in Marine Biology I | Laboratory and Field Exercises in Marine Biology II | | Field Biology, II | | | |
| Acquire specialized knowledge of biology ranging from the molecular and cellular levels to the individual level | | | | Animal Morphogenesis Structural Plant Biology | Neuronal Cell Biology Cell Biochemistry Cell Structure and Function Neurophysiology Molecular Biology of Plant Development Environmental Plant Cell Biology Readings in Biology, I | Functions of Genetic Information Molecular Physiology of Animal Behavior Neuroethology Molecular Genetics Readings in Biology, II | Research | |
| Acquire specialized knowledge of biology ranging from the individual level to the species and ecosystem levels | | | Laboratory and Field Exercises in Marine Biology II | Marine Biology Biological Systems | Readings in Biology, I Field Biology, II | Environmental Biology Readings in Biology, II | | |
| Acquire research methods for biology, scientific thinking skills and communication skills involved in research activities | | Field Biology, I Laboratory and Field Exercises in Marine Biology I | Laboratory Exercises in Biology I A Laboratory and Field Exercises in Marine Biology II | Laboratory Exercises in Biology I B | Laboratory Exercises in Biology II A · II B Readings in Biology, I Field Biology, II | Laboratory Exercises in Biology III A · III B Readings in Biology, II | | |

Department of Earth and Planetary Sciences

| Aims of the programme | 1st year, 1st semester | 1st year, 2nd semester | 2nd year, 1st semester | 2nd year, 2nd semester | 3rd year, 1st semester | 3rd year, 2nd semester | 4th year, 1st semester | 4th year, 2nd semester |
|--|---|--|--|--|--|--|------------------------|------------------------|
| Acquire a high quality education | Liberal Education Introduction to Computer Literacy Sports and Fitness Course I | Liberal Education Health Sciences Sports and Fitness Course II | Liberal Education | Liberal Education | | | | |
| Develop excellent communication skills | First Foreign Language Second Foreign Language | First Foreign Language Second Foreign Language | First Foreign Language Second Foreign Language | Second Foreign Language | | | | |
| Obtain a wide base of knowledge for specialities | Introduction to Calculus Calculus 1 Introduction to Linear Algebra Linear Algebra 1 Physics B1 Physics C1 Basic Inorganic Chemistry Basic Organic Chemistry Biology I | Calculus 2 Linear Algebra 2 Physics B2 Physics C2 Physics C3 Basic Physical Chemistry Introduction to Computer Science | Physics B3 Physics C4 Physics Laboratories | Laboratory Chemistry | | | | |
| Survey a base of earth and planetary sciences | Earth-Planetary Sciences I | Earth-Planetary Sciences II | | | | | | |
| Develop basic skills and abilities for learning earth and planetary sciences (understanding, calculations, logical thinking) | Fundamentals of Earth and Planetary Sciences I Exercise of Fundamental Earth and Planetary Sciences I | Fundamentals of Earth and Planetary Sciences II Exercise of Fundamental Earth and Planetary Sciences II | Fundamentals of Earth and Planetary Sciences III Exercise of Fundamental Earth and Planetary Sciences III Fundamentals of Earth and Planetary Sciences IV Exercise of Fundamental Earth and Planetary Sciences IV | Fundamentals of Earth and Planetary Sciences V Exercise of Fundamental Earth and Planetary Sciences V | | | | |
| Learn fundamentals of earth and planetary sciences | | | Earth and Planetary Material Science Fundamentals of Earth Planetary Physics I Solid Earth | Fundamentals of Earth Planetary Physics II Earth and Planetary Evolution Science Planetary Physics | Fundamentals of Earth Planetary Physics III | | | |
| Experience advanced applications and acquire prospects | | | | | Geology I Physics of Solid Earth I Planetary Material Science Planetary and Space Science | Geology II Physics of Solid Earth II Computational Earth and Planetary Atmospheric Science Introduction to Bioinformatics | Research Colloquium | |
| | Field Exercise on Geology Shipboard Observation Practice | | | | | | | |
| Develop practical skills and abilities for learning earth and planetary sciences through exercise and experiments | | | | Fundamental Experiment Training of Earth and Planetary Science | Experimental Training of Earth and Planetary Science A Experimental Training of Earth and Planetary Science B Experimental Training of Earth and Planetary Science C | Experimental Training of Earth and Planetary Science D Experimental Training of Earth and Planetary Science E | | |