

シラバス参照

開講年度/Year	2023
科目名	地球惑星物質科学入門
Course	Introduction of Earth and Planetary Material Sciences
曜日・講時/Day/Period	後期 火曜日 2講時
単位数/Credit(s)	2
担当教員/Instructor	中嶋 大輔 奥村 聡 栗林 貴弘 古川 善博
学期/Semester	後期
科目ナンバリング /Course code/number	SEP-EAS801E
使用言語 /Language Used in Course	英語
メディア授業科目 /Course of Media Class	

所属講座等	地球惑星物質科学講座（マクドノウ教授、栗林、奥村、古川、中嶋） 東北アジア研究センター（Pastor-Galán Daniel）
授業題目	地球惑星物質科学入門
Course Title	Introduction to Earth and Planetary Material Sciences
授業の 目的と概要	<p>本講義は全て英語で行われ、短期留学生プログラムの“Dynamics of the Earth”と共通で開講する。</p> <p><注意> 学部で開講された地球惑星物質科学入門（Introduction to Earth and Planetary Material Sciences）を受講し、単位認定を受けた者は、単位認定されない。</p> <p>日本人の地球科学系の院生にとっては、内容の一部は復習になるであろう。ただし、地球初期生命進化、地球化学、火山学、鉱物学、地球内部物理については他の講義で不足している基礎的な内容が補則されるので聴講を推奨する。 内容の学習にとどまらず、主体的に授業に参加する留学生の積極的な態度から多くを学んで欲しい。他の講義や学会等でも質問をすることに躊躇せず、自分の考えを理論的な述べられるようになるきっかけとなれば幸いである。 また、国際語としての英語の必要性を肌で感じ、英語学習の動機付けもねらっている。</p>
Purpose /Abstract	This class is an introductory geology program to understand fundamental issues of Earth Sciences. So, the basic of Mineralogy, Petrology, Volcanology, Geochemistry and Experimental Mineral Physics will be taught and some recent topics in each part will be introduced. Three Associate Professors and one lecturer will give the lectures weekly.
学修の 到達目標	地球惑星科学における様々な研究分野に関する基礎的な内容に触れ、研究活動に役立つ地球科学の分野に対する基礎知識を習得すること。
Goal	The goal of this class is to obtain wide background knowledge concerning Earth Sciences as well as the basic of mineralogy, petrology, volcanology, and geochemistry.
授業内容・ 方法と 進度予定	<p>基礎的な内容の講義を専門分野ごとにマクドノウ教授、栗林、古川、奥村、中嶋及びPastor-Galán Danielが行う予定であり、標本館見学、ラボツアーを織り交ぜる(予定)。</p> <p>以下に、講義タイトル(予定)を示す。 Detail of schedules will be announced at the guidance of this class.</p> <ul style="list-style-type: none"> - Guidance - History of the Earth 1 (Associate Professor Yoshihiro FURUKAWA) This lecture covers the overview of the formation of planetary system, oceans, and continents in the very beginning of the Earth's history. - History of the Earth 2 (Associate Professor Yoshihiro FURUKAWA) Origin of life on the Earth and researches in astrobiology are introduced. - Evolution history of the Solar System 1 (Lecturer Daisuke Nakashima) An overview of the current Solar System. - Evolution history of the Solar System 2 (Lecturer Daisuke Nakashima) A general picture of the Solar System evolution. - Introduction to volcanology1 (Associate Professor Satoshi Okumura)

This lecture introduces the dynamics of solid earth and the origin of volcano.

- Introduction to volcanology2 (Associate Professor Satoshi Okumura)
we discuss the mechanism of volcanic eruptions based on physical and chemical properties of magma.
- Introduction to Mineralogy and Crystallography 1 (Associate Professor Takahiro KURIBAYASHI)
This lecture introduces the fundamentals of Mineralogy will be lectured: Definition, Crystal Structure and Symmetry etc.
- Introduction to Mineralogy and Crystallography 2 (Associate Professor Takahiro KURIBAYASHI)
This lecture introduces the classification of Minerals and how to identify minerals will be lectured.
- The Solar System: Sun and planets (Professor William McDonough)
Physics and chemistry of solar system objects: Greeks-Copernicus-today
- The Earth System: core-mantle-crust (Professor William McDonough)
Physics and chemistry of the Earth
- How the Solid Earth works? The puzzle of plate tectonics. (Assistant Professor Pastor-Galán Daniel)
You will learn how plates move and interact among each other and how scientists understood the movements.
- The tectonic scars: A geological record.
In this lecture, you will learn which are the consequences of plate tectonics from mountain ranges to the formation of new oceans.

Detail of schedules will be announced at the guidance of this class.

- Guidance
- History of the Earth 1 (Associate Professor Yoshihiro FURUKAWA)
This lecture covers the overview of the formation of planetary system, oceans, and continents in the very beginning of the Earth's history.
- History of the Earth 2 (Associate Professor Yoshihiro FURUKAWA)
Origin of life on the Earth and researches in astrobiology are introduced.
- Evolution history of the Solar System 1 (Lecturer Daisuke Nakashima)
An overview of the current Solar System.
- Evolution history of the Solar System 2 (Lecturer Daisuke Nakashima)
A general picture of the Solar System evolution.

Contents and progress schedule of the class

- Introduction to volcanology1 (Associate Professor Satoshi Okumura)
This lecture introduces the dynamics of solid earth and the origin of volcano.
- Introduction to volcanology2 (Associate Professor Satoshi Okumura)
we discuss the mechanism of volcanic eruptions based on physical and chemical properties of magma.
- Introduction to Mineralogy and Crystallography 1 (Associate Professor Takahiro KURIBAYASHI)
This lecture introduces the fundamentals of Mineralogy will be lectured: Definition, Crystal Structure and Symmetry etc.
- Introduction to Mineralogy and Crystallography 2 (Associate Professor Takahiro KURIBAYASHI)
This lecture introduces the classification of Minerals and how to identify minerals will be lectured.
- The Solar System: Sun and planets (Professor William McDonough)
Physics and chemistry of solar system objects: Greeks-Copernicus-today
- The Earth System: core-mantle-crust (Professor William McDonough)
Physics and chemistry of the Earth
- How the Solid Earth works? The puzzle of plate tectonics. (Assistant Professor Pastor-Galán Daniel)
You will learn how plates move and interact among each other and how scientists understood the movements.
- The tectonic scars: A geological record.
In this lecture, you will learn which are the consequences of plate tectonics from mountain ranges to the formation of new oceans.

成績評価方法

出席・レポート

Grading

Attendance and brief reports or exams.

教科書および参考書

各教員より講義の際に連絡される。

Books required /referenced

授業時間外学修

各教員より講義の際に連絡される。

Preparation and review

Indicate by each speaker during class

実務・実践的授業 /Practical business ※○は、実務・実践的授業であることを示す。 /Note: "○" Indicates the practical business

その他

講義スケジュール等の詳細は追って掲示される。講義は対面もしくはオンラインで行う。
The class schedule will be announced later, and lecture styles are face-to-face and online.
クラスコード: xjs44rr

Remarks

1単位の授業科目は、45時間の学修を必要とする内容をもって構成することを標準としています。1単位の修得に必要な学修時間の目安は、「講義・演習」については15～30時間に授業および授業時間外学修(予習・復習など)30～15時間、「実験、実習及び実技」については30～45時間の授業および授業時間外学修(予習・復習など)15～0時間です。

One-credit courses require 45 hours of study. In lecture and exercise-based classes, one credit consists of 15-30 hours of class time and 30-15 hours of preparation and review outside of class. In laboratory, practical skill classes, one credit consists of 30-45 hours of class time and 15-0 hours of preparation and review outside of class.