Year	Second semester 2025
Course	Lecture on Basic Material Science
Day/Period	Thu.2Period
Credit(s)	2Credits
Instructor	理学部非常勤講師
Eligible Participants	Not specified (For all grades)
Course code/number	SPH-PHY507B
Main Subjects	
Course of Media Class	
Practical business	
Language Used in Course	English
Course Title	Basic Concepts in Solids
Purpose/Abstract	The purpose of this course is to understand the macroscopic properties of solids, such as electrical conductivity and heat capacity, by learning about the motion of periodic lattices and the behavior of electrons moving within the lattices.
Goal	The goal of this course is to understand fundamental concepts of solid-state physics that serve as a prerequisite to students' own research.
Contents and progress schedule of the class	This class is open only to students from abroad, therefore expected to be a mini-class. The course will start with crystal structures and reciprocal lattices, then move on to lattice vibrations and phonons, and finally cover electron motion in periodic lattices and elementary band theory. The contents and pace will be adjusted based on the major of attending students.
Grading	Evaluation is performed comprehensively based on class attendance, submitted assignments, and final exam results.
Books required/referenced	Ashcroft and Mermin, Solid state physics
Contents of preparation and review	Because of the time limitation, a part of the calculation and derivation will be skipped in the class. Students are required to follow the mathematical detail skipped in the class.
Study time for preparation and review	Standard Hours for Preparation/Review per class: *Lectures 4 hour *Seminar 2-4 hour *Experiment, Laboratory Work, and Skill Test 2 hours
How to contact and Google Classroom Code	Prof. Masao NAKAMURA masao.nakamura.b8@tohoku.ac.jp
Remarks	Lecture style : Face-to-face
Last Update	

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.