科目ナンバリング														
授業科目 [:] <英訳>	Basic Physical Chemistry (quantum theory)-E2 Basic Physical Chemistry (quantum theory)-E2 世当者所属 職名・氏名													
群	自然科学科目群			分野 (分	分野 (分類) 化学(1	使用言語 英語			
旧群	B群 単位数 2単位			週二下	週コマ数 1コマ			授業形態講						
開講年度・ 開講期	2025・前期 曜時限 火			火3			配当学年 まとして		主として	1・2回生	対象学	生理系向		
[授業の	概要・目]的]												
Course overview: We will discuss basics of quantum chemical theory														
1. Review of physical chemistry II and introduction of quantum chemistry Schrodinger equation, operators, harmonic oscillator, particle in a box														
2. Angular momentum														
3. Theorems of quantum mechanics Hermitian operators, eigenfunction expansion, commuting operators, parity														
4. Approximation method Variation method, and perturbation theory														
5. Hydrogen, helium, many-electron atoms hydrogen and helium, many electron atoms														
6. Electronic structure of molecules														
[授業計画と内容]														
Topics week Note														
Quantum theory: Introduction and principles 1-2 Energy quantization, wave-particle duality, Schrodinger equation, Born interpretation of the wavefunction, operators, the uncertainty principle, the postulates of quantum mechanics														
Quantum theory: techniques and applications 3-6 A particle in a box, harmonic oscillator, a particle on a ring, a particle on a sphere														
Atomic structure and spectra 7-10 The structure of hydrogenic atoms, atomic orbitals and their energies, spin- orbit coupling, term symbols, selection rules														
Molecular structure 11-14 Born-Oppenheimer approximation, valence-bond theory, molecular orbital theory, homonuclear diatomic molecules, heteronuclear diatomic molecules, polyatomic systems														
Final/survey 15 Final exam for Wk 1-14 contents														
		Basic Physical Chemistry (quantum theory)-E2(2)へ続く												

Basic Physical Chemistry (quantum theory)-E2(2)

_____ [履修要件]

-特になし

[成績評価の方法・観点]

Grades: One final exam (60%), 6 quizzes $(30\% = 6 \times 5\%)$, attendance and class participation (10%)

[教科書]

P. Atkins and J. de Paula. Physical Chemistry, 9th ed 2014 (Oxford University Press) ISBN: 9780199697403 (8th or 10th edition is also OK, but students are responsible to check the differences between editions)

[授業外学修(予習・復習)等]

Homework: During the semester, you will have four homework assignments and the sum of four grades, will count 20% towards the final grade. Problem sets of homework will be assigned from the textbook(see the course textbook).Only legible and intelligible answers will be considered, and otherwise, you will lose some or all credits for the problem. No late homework turn-in will be accepted, unless the late return is excused.

[その他(オフィスアワー等)]

Instructor: Jaehong Park (email: j.park@moleng.kyoto-u.ac.jp)

Course meeting: (Yoshida South campus, XXX, XXX), 1 session/week, 90 mins/session

Office hour: (Location and Time: Katsura campus, A4-205, appointment by email).

Exams: There will be one 90-min final exam. The final exam will be held during the final exam schedule (XX-XX), which will be announced later.

Quizzes: There will be six quizzes. The sum of 6-quiz grade will count 30% towards the final grade.

[主要授業科目 (学部・学科名)]