

科目ナンバリング											
授業科目名 <英訳>	Basic Physical Chemistry (quantum theory)-E2 Basic Physical Chemistry (quantum theory)-E2					担当者所属 職名・氏名	工学研究科 講師 PARK , Jaehong				
群	自然科学科目群			分野(分類)	化学(基礎)			使用言語	英語		
旧群	B群	単位数	2単位	週コマ数	1コマ	授業形態	講義 (対面授業科目)				
開講年度・ 開講期	2024・前期		曜時限	火3		配当学年	主として1・2年生	対象学生	理系向		
【授業の概要・目的】											
Course overview: We will discuss basics of quantum chemical theory											
【到達目標】											
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】											
Quantum theory:Introduction and principles week 1-2											
Quantum theory:techniques and applications week 3-6 (Quiz at Week 4 for Wk 1-3 contents)											
Atomic structure and spectra week 7-10 (Quiz at Week 8 for Wk 4-7 contents)											
Molecular structure week 11-14(Quiz at Week 12 for Wk 8-11 contents)											
Final/survey week 15 (Final exam for Wk 1-14 contents)											
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【履修要件】

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【成績評価の方法・観点】

Exams: There will be one 90-min final exam. The final exam will be held during the final exam schedule (Jul/24-Aug/4), which will be announced later.

Quizzes: There will be three quizzes (May/2, May/30, Jun/27). The sum of 3-quiz grade will count 30% towards the final grade.

Grades: One final exam (45%), 3 quizzes (30% = $3 \times 10\%$), 4 homeworks (20% = $4 \times 5\%$), attendance and class participation (5%)

【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）】

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

Office hours are thought as an opportunity for you to clarify your understanding of the material. I encourage student to use this opportunity, but I expect you have already tried to study the problems yourself for a few hours.