MODULE HANDBOOK

Module Name	Quantum Chemistry
Module level	Bachelor
Abbreviation, if applicable	
Sub-heading, if applicable	-
Course included in the module, if applicable	-
Semester/term	2nd/First Year
Module coordinator(s)	Prof. Dr. Suyono, M.Pd.
Lecturer(s)	Dr. IGM Sanjaya, M.Si., Samik, S.Si., M.Si., and Findiyani E. Asih, S.Pd., M.Pd.
Language	Indonesian
Classification within the curriculum	Compulsory Course
Teaching format/class hours per week during the semester:	3 hours lecturers (50 min per hours)
Workload:	1 CU for bachelor degree equals to 3 workhours per week or 170 minutes (50' face to face learning, 60' structured learning, and 60' independent learning). In one semester, courses are conducted in 14 weeks (excluding mid and end-term exam). Thus, 1 CU equals to 39.67 workhours per semester. One CU equals to 1.59 ECTS.
Credit points:	3 x 1.59 = 4,77 ECTS
Prerequisites course(s):	Basic Chemistry I
Targeted learning outcomes:	1. Students can take advantage of digital transformation and various other learning resources to support their understanding of quantum chemistry. 2. Students can master the concepts and basic principles of quantum chemistry which are appropriate for the structure, bonds, and characteristics of various materials in physical chemistry. 3. Students are able to make decisions in formulating solutions to quantum chemical problems related to atomic structure, chemical bonds, molecular structure, molecular symmetry, spectroscopy and molecular interactions. 4. Students have good morals, ethics and personality in completing quantum chemistry assignments independently or in groups and are responsible for communicating the results. 5. Students have Ability to integrate the concept of technopreneurship in quantum chemistry

Content:	1. Basic Concepts and Principles of Quantum Chemistry. 2. The application of quantum chemistry to translational, vibration and rotation motion 3. The application of quantum chemistry to the structure of the hydrogen atom and the atom with many electrons 4. Chemical bond theory (Valence bond theory and molecular orbital theory) 5. Molecular symmetry 6. Molecular spectroscopy 7. Molecular interactions
Study / exam achievements:	Students are considered to be competent and pass if at least get 55 Final score is calculated as follows: 20% participation + 30% assignment + 20% middle exam (UTS) & 30% final exam (UAS) Table index of graduation • A = 4 (85 ≤-≥ 100) • A- = 3,75 (80 ≤-< 85) • B+ = 3,5 (75 ≤- < 80) • B = 3 (70 ≤-< 75) • B- = 2,75 (65 ≤-<75) • C+ = 2,5 (60 ≤-<65) • C = 2 (55 ≤-<60) • D = 1 (40 ≤-<55) • E = 0 (0 ≤-<40)
Media:	Computer, LCD, White board, internet
Learning Methods	Individuals assignment, group assignment, discussion, and presentation
Literature:	1. Atkins, P., Paula, J.d., and Keeler, J. 2018. Atkin's Physical Chemistry, 11th edition. New York: Oxford University Press. 2. Levine, Ira N. 2014. Quantum chemistry, 7th edition. New York: Pearson Education, Inc 3. Mortimer, R.G. 2008, Physical Chemistry, 3th edition, London: Elsevier Inc.
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