



Diponegoro University
Faculty of Science and Mathematics
Undergraduate Program Of Chemistry

Module designation	Inorganic Chemistry 1 (KAno1)
Semester(s) in which the module is taught	2
Person responsible for the module	Dr. Choiril Azmiyawati, M.Si.
Language	Indonesian
Relation to curriculum	Compulsory/ elective / specialisation
Teaching methods	Lecture
Workload (incl. contact hours, self-study hours)	Face to face : 1 x (3 x 50 min); Structured study: 1 x (3 x 60 min); Self study: 1 x (3 x 60 min)
Credit points	3
Required and recommended prerequisites for joining the module	KD1, KU
Module objectives/intended learning outcomes	(S9) Demonstrate a responsible attitude towards work in their area of expertise independently (PP1) Mastering theoretical concepts about atomic theory, bonds, structure, and properties of a compound based on its design and constituent elements (KU1) Able to apply logical, critical, systematic, and innovative thinking in the context of the development or implementation of science and technology that pays attention to and uses humanities values by their field of expertise (KU2) Able to demonstrate independent, quality, and measurable performance (KU7) Able to be responsible for the achievement of group work results and supervise and evaluate the completion of work assigned to workers under their responsibility (KK3) Able to analyze several alternative solutions in the field of identification and analysis of simple solids

Content	<ol style="list-style-type: none"> 1. Atomic Structure Review: Development of atomic theory, Principles of quantum theory, Hydrogen Atoms and Hydrogen-like atoms: Atomic orbitals 2. Atomic Structure Review: Poly-electronic atoms, some atomic properties 3. Simple bond theory: Types of Chemical Bonds, Lewis Structures, VSEPR Theory 4. Simple bond theory: Valence bond theory, Hydrogen bond 5. Basic concepts Molecular symmetry: Elements and symmetry operations 6. Basic concepts Molecular symmetry: Point group 7. Basic concepts Molecular symmetry: Properties and representation of groups 8. Basic concepts of Molecular Symmetry: Character Table 9. Molecular orbital theory: Formation of atomic orbitals and molecular orbitals 10. Molecular orbital theory: Homonuclear Diatom molecules, Heteronuclear diatomic molecules 11. Molecular orbital theory: "Molecular orbitals for large molecules <ol style="list-style-type: none"> a. FHF^- b. CO_2 c. H_2O d. NH_3 12. Relationship between bond structure and properties: bond length, Bond strength, Electronegativity, and bond enthalpy, the Oxidation rate 13. Simple solids structure: The description of the forms of solids, Ionic solids 14. Simple solid structure: The energetics of ionic bonding
Exams and assessment formats	Mid-Semester Exam and Final Exam
Study and examination requirements	Participatory Activities -20% Project Results -30% Task -10% Quiz -10% Mid-semester -15% Final exams -15%

Reading list

1. Garry L. Miesler, Donald A Tarr, 1991, "Inorganic Chemistry", Prentice Hall International Edition, Singapore
2. Owen, S.M. & Brooker, A.T, 1991, "A Guide to Modern Inorganic Chemistry", Longmans Group, Singapore
3. Manku, G.S., 1980, "Theoretical Principles of Inorganic Chemistry", Mc Graw Hill
4. Huhey, J.E., 1983, "Inorganic Chemistry Principles of Structure and Reactivity", 3 ed, Harper Inc., New York
5. Cotton, F.A.G, Wilkinson, G., 1987, "Basic Inorganic Chemistry", John Wiley and Sons, New York