

### Module Descriptions

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| <b>Module designation</b>                                     | <b>Basic Theory of Inorganic Chemistry</b>   |
| Semester(s) in which the module is taught                     | 3 <sup>rd</sup> Semester/Second Year   |
| Person responsible for the module                             | Dr. Dina Kartika Maharani, S.Si., M.Sc.  |
| Language  | Bahasa Indonesia (Regular Class)<br>Bahasa Inggris (Internasional Class)   |
| Relation to curriculum  | Compulsory course  |
| Teaching methods  | Case Method<br>3 workhours per week (3 x 170 minutes per week)   |
| Workload (incl. contact hours, self-study hours)              | 1 CU for a bachelor's degree equals 170 minutes (50 minutes face-to-face, 60 minutes structured, 60 minutes independent learning) per week × 14 weeks, excluding mid and end-term exams. = 39.67 work hours per semester = 1.587 ECTS.   |
| Credit points   | 3 Credit Units (CU) = 4.77 ECTS  |
| Required and recommended prerequisites for joining the module | Basic Chemistry  |
| Module objectives/intended learning outcomes                  | <ol style="list-style-type: none"> <li>1. Analyzing the periodicity of elemental properties and its relationship with atomic structure and electron configuration.</li> <li>2. Elaborating on the concepts of covalent and ionic bonds, as well as intermolecular forces, in determining the properties of compounds.</li> <li>3. Evaluating acid-base theories and redox reactions based on thermodynamic principles in the context of chemical problem-solving.</li> <li>4. Implementing the concepts of chemical bonding, acid-base reactions, redox reactions, and solid-state systems through scientific discussion activities and group collaboration, as well as presenting the study results responsibly.</li> </ol> |
| Content   | A study (or review) of the periodicity of elemental properties, covalent bonds, ionic bonds, chemical forces, acid-base theories, fundamentals of chemical reactions, thermodynamics and redox reactions, solid-state systems.   |
| Examination forms   | Essay and Oral Presentation  |

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| Study and examination requirements | <p><b>Study and Examination Requirements/Assessment:</b></p> <ol style="list-style-type: none"> <li>1. Individual assignments (case analysis reports)</li> <li>2. Group case studies and discussions</li> <li>3. Documentation and presentation of case study findings</li> </ol> <p><b>Assessment Recap (Case Study-Oriented):</b></p> <ol style="list-style-type: none"> <li>1. Participatory Activities/Case Study Analysis: 60%</li> <li>2. Portfolio: 17,5%</li> <li>3. Test: 22.5%</li> </ol> <p>Total: 100%</p>  |
| Reading list                       | <ol style="list-style-type: none"> <li>1. INORGANIC CHEMISTRY HAND BOOK: A Legend Book for M.Sc. I Semester Chemistry. (2025). (n.p.): Shashwat Publication.</li> <li>2. Pfennig, B. W. (2022). Principles of Inorganic Chemistry. United Kingdom: Wiley.</li> <li>3. Mackay, R., Henderson, W. (2017). Introduction to Modern Inorganic Chemistry, 6th Edition. United Kingdom: CRC Press.</li> <li>4. Hosmane, N. S. (2017). Advanced Inorganic Chemistry: Applications in Everyday Life. United Kingdom: Elsevier Science.</li> <li>5. Huheey, J. E. ; Keiter, E. A. ; Keiter, R. L. , 1990, Inorganic Chemistry, Principles of Structure and Reactivity, Fourth Edition, HarperCollins College Publishers.</li> <li>6. Madan, R. D. , 1997. Modern Inorganic Chemistry, S. Chand and Company LTD, NewDelhi.</li> <li>7. Sugiarto, Bambang. 2012. Sistem Periodik Unsur. Surabaya: Penerbit Unesa</li> <li>8. Sari Edi Cahyaningrum, 2018, Dasar Reaksi Kimia Anorganik, Unesa University Press</li> </ol> |