# MODULE HANDBOOK

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| Module Name | Transition Elements of Inorganic Chemistry |
| Module level | Bachelor |
| Abbreviation, if applicable | 8420403120 |
| Sub-headings, if applicable | - |
| Course included in the module, if applicable | - |
| Semester / term | 7th / Fourth Year |
| Module coordinator (s) | Dr. Amaria, M.Si. |
| Lecturer (s) | 1. Dr. Amaria, M.Si.<br>2. Prof. Dr. Sari Edi Cahyaningrum, M.Si.<br>3. Dr. Muchlis, S.Pd., M.Pd.<br>4. Kusumawati Dwiningsih, S.Pd., M.Pd. .<br>5. Rusly Hidayah, S.Si., M.Pd. |
| Language | Indonesian |
| Classification within the Curriculum | Compulsory Course |
| Format / class teaching hours per week during the semester: | 3 hours lecturers (50 min per hours) |
| Workload: | 3 x 50 minutes lectures, 3 x 60 minutes structured activity,<br>3 x 60 minutes individual activity, 14 weeks per semester,<br>119 total hours per semester ~ 4.77 ECTS** |
| Credit points: | 3 CU = 3 x 1.59 = 4.77 ECTS |
| Prerequisite course (s): | - |
| Targeted learning outcomes: | CLO 1 : Students have the ability to utilize learning resources and ICT to support mastery of concepts and theories of inorganic chemistry<br>CLO 2 : Students have knowledge about the basic concept of metal extraction, properties of physical and chemistry, of transition's element and compound of first, second, and third block d<br>CLO 3 : Students make decision related concept of periodic table properties, properties of physical and chemistry, of transition's element and compound of first, second, and third block d<br>CLO 4 : Students have an honest and responsible attitude in study inorganic chemistry concept. |
| Content: | **1. Principles of metals extraction;**<br>2. **Introduction of transition metals**: 1. Propertiesof transition metals, 2. Size of atom and ion, 3. Ionization energy; 4. Magnetic properties, 5. Catalytic properties, 6. Stability of oxidation state level, 7. Reactivity, 8. Stability of complex. Complex compound and color<br>3. **Scandium and titanium groups:** 1. General properties of scandium group, 2. Oxide and scandium group compounds, 3. extraction, properties, and using of scandium group, 4. General properties of titanium group, |

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<tr><td></td><td>5. Oxide andtitanium group compounds, 3. extraction, properties, and using of titanium group,<br>4. Vanadium group: 1. General properties of vanadium group, 2. Oxide and scandium group compounds, 3. extraction, properties, and using of scandium group<br>5. Chromium group:1. General properties of chromium group, 2. Oxide andchromium group compounds, 3. extraction, properties, and using of chromium group<br>6. Manganese group: 1. General properties of manganese group, 2. Oxide andmanganese group compounds, 3. extraction, properties, and using of manganese group<br>7. Iron group:1. General property of iron group, 2. Oxide andiron group compounds, 3. extraction, properties, and using of iron group<br>8. Cobalt group: 1. General properties of cobalt group, 2. Oxide andcobalt group compounds, 3. extraction, properties, and using of cobalt group<br>9. Nickel group:1. General properties of nickel group, 2. Oxide andnickel group compounds, 3. extraction, properties, and using of nickel group<br>10. Copper group: 1. General properties of copper group, 2. Oxide andcopper group compounds, 3. extraction, properties, and using of copper group<br>11. Zinc group:1. General properties of zink group, 2. Oxide andzinc group compounds, 3. extraction, properties, and using of zinc group.</td></tr>
<tr><td>Study / exam achievements:</td><td>Students are considered to complete the course and pass if they obtain at least 40% of maximum final grade. The final grade (NA) is calculated based on the following ratio:
<table>
<tr><td>Assessment Components</td><td>Percentage of contribution</td></tr>
<tr><td>Participation</td><td>20%</td></tr>
<tr><td>Assignment</td><td>30%</td></tr>
<tr><td>Mid-semester test</td><td>20%</td></tr>
<tr><td>Final semester test</td><td>30%</td></tr>
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<tr><td>Media:</td><td>Computer, LCD, White board</td></tr>
<tr><td>Learning Methods</td><td>Individuals assignment, group assignment, discussion, and presentation.</td></tr>
<tr><td>Literature:</td><td>1. Dina Kartika Maharani, et al. 2017. Transitional Inorganic Chemistry. Surabaya: Unesa University Press<br>2. Madan, RD, 1997.Modern Inorganic Chemistry. New Delhi .: S. Chand and Company Ltd<br>3. Manku, GS, 1980. Inorganic Chemistry. India: Tata Mc Graw Hill Book Co.<br>4. Lee, JD 1991. Concise Inorganic Chemistry. Fourth Edition. London: Chapman & Hall</td></tr>
<tr><td>Notes:</td><td>*1 CU in learning process = three periods consist of: (a) scheduled instruction in a classroom or laboratory (50</td></tr>
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| | minutes); (b) structured activity (60 minutes); and (c) individual activity (60 minutes) according to the Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 44 Year 2015 jo. the Regulation of Indonesia Ministry of Research,<br>Technology, and Higher Education No. 50 Year 2018. |
| | **1 CU = 1,59 ECTS according to Rector Decree Of Universitas<br>Negeri Surabaya No. 598/Un38/Hk/Ak/2019 |