# MODULE HANDBOOK

| | |
|---|---|
| Module Name | Environmental Chemistry |
| Module level | Bachelor |
| Abbreviation, if applicable | 3074213044 |
| Sub-heading, if applicable | - |
| Course included in the module, if applicable | - |
| Semester/term | 7th semester / Fourth Year |
| Module coordinator(s) | Prof. Dr. Suyono, M.Pd. |
| Lecturer(s) | Prof. Dr. Suyono, M.Pd.<br>Dr. Amaria, M.Si.<br>Dina Kartika Maharani, M.Sc.<br>Rusmini S.Pd, M.Si. |
| 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: | a. Lecture:<br>2 x 50 minutes lectures,<br>2 x 60 minutes structured activity,<br>2 x 60 minutes individual activity, 14 weeks per semester,<br>79.33 total hours per semester ~ 3.18 ECTS<br>b. Lab activity:<br>1x170 minutes lab activity, 14 weeks per semester<br>39.67 total hours of lab activity per semester ~ 1.59 ECTS<br><br>Total of lecture and lab activity =<br>119 total hours per semester ~ 4.77 ECTS** |
| Credit points: | 3 CU x 1.59 = 4,77 ECTS |
| Prerequisites course(s): | Instrumental Analysis, Organic Chemistry 3, Inorganic Chemistry 3 |
| Targeted learning outcomes: | 1. Students have knowledge about the sources, reactions, displacement, effects, and changes of chemical species in the air, water and soil, the reciprocal effect of human activities on all of these, and Environmental Impact Analysis (AMDAL)<br>2. Students are skilled at using tools in conducting experiments on water quality parameters from the environment<br>3. Students have the ability to cooperate and are responsible for discussing knowledge about 1) sources, reactions, displacement, effects, and changes in chemical species in air, water and soil, 2) The reciprocal influence of human |

<table>
<tr><td></td><td>activities on all the so-called in no.1 and 3) Environmental impact analysis (AMDAL)<br>4. Students have the ability to communicate knowledge about 1) sources, reactions, displacement, effects, and changes in chemical species in the air, water and soil, 2) The reciprocal influence of human activities on all those mentioned in no. 1 and 3) Environmental impact analysis (AMDAL)</td></tr>
<tr><td>Content:</td><td>water pollutant<br>soil pollutant<br>air pollutant<br>amdal (Environmental Impact Analysis)</td></tr>
<tr><td>Attribute Soft Skill</td><td>Active communication; Disipline; Collaboration; Responsibility; and Argumentation in class and outdoor setting</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>
</table></td></tr>
<tr><td>Media:</td><td>Computer, LCD, White board, laboratory, book, practicum guide book, wastewater treatment plant</td></tr>
<tr><td>Learning Methods</td><td>Individuals assignment, group assignment, discussion, presentation, practicum, observation, project based learning</td></tr>
<tr><td>Literature:</td><td>1. De, anil Kumar. 1987. Environmental Chemistry. India: Willey Eastern Limited.<br>2. Faust, S.D and Aly, O.M.1981. Chemistry of Natural Water. London: Ann Arbor Science.<br>3. Manahan, S.E. 1994. Environmental Chemistry. London: Lewis Publishers CRC Pres.Inc<br>4. More,J.W. and More,E.A.,1976. Environmental Chemistry. New York: Academic Press.<br>5. Radojevic, Miroslav and Bashkin, Vladimir N, 1999, Practical Environmental Analysis, Cambridge : Royal Society of Chemistry<br>6. Harrison, R.M., E, Ronald., Hester. 2019. Plastics and environment. Royal Society of Chemistry. UK.<br>7. Rajendran, S., Qin, J., Gracia, F., Eric L. 2021. Metal and Metal Oxides for Energy and Electronics. Springer International. Germany.</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 minutes); (b) structured activity (60 minutes); and (c)</td></tr>
</table>

| | |
|---|---|
| | 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, Technology, and Higher Education No. 50 Year 2018. |
| | **1 CU = 1,59 ECTS according to Rector Decree Of Universitas Negeri Surabaya No. 598/Un38/Hk/Ak/2019 |