Module Description
MPK 2102 Qualitative Analysis of Cations and Anions Laboratory

Module Name	**Qualitative Analysis of Cations and Anions Laboratory**
Module Level, if applicable	Undergraduate Programme
Code, if applicable	MPK 2102
Subtitle, if applicable	-
Course, if applicable	-
Semester(s) in which the module is taught	3rd Semester
Module Coordinator (s)	Firman Shantya Budi, S.Pd.,M.Sc.
Lecturer	Titin Anita Zaharah, S.Si., M.Sc. Firman Shantya Budi, S.Pd.,M.Sc. Dr. Lia Destiarti, S.Si., M.Si. Elliska Murni Harfinda, S.Si., M.Si.
Language	Bahasa Indonesia
Relation to curriculum	Compulsory course for the undergraduate programme in Chemistry
Type of teaching, contact hours	• Laboratory work: 7 meetings • Self-study: 7 meetings • Tutorial/assistance: 1 meeting • Examination: 1 meeting
Workload	*(Estimated)* *Contact hours (laboratory work): 7 x 2,83 hours = 19,81 hours* *Self-study, including examination preparation, specified in hours: 7 x 2,83 hours = 19,81 hours* *Tutorial/assistance: 1 x 2,83 hours = 2,83 hours* *Examination: 1 x 2,83 hours = 2,83 hours* *Total workload: 45,28 hours per semester*
Credit Points	1 (1.67 ECTS)
Requirements according to the examination regulations	Registered in this course 100% attendance in this course
Learning goals/competencies:	**Intended Learning Outcomes (ILO)** After taking this course, students will be able to:

<table>
<tr><td></td><td>1. LO-1
2. LO-2
3. LO-3
4. LO-5</td></tr>
<tr><td>Module objectives</td><td>1. Students are able to explain the reactions of cations and anions in the solution medium
2. Students are able to classify and identify cations based on general reagents and specific reagents
3. Students are able to identify anions based on their specific reagents</td></tr>
<tr><td>Content</td><td>1. Group I Cations
2. Group II Cations
3. Group III Cations
4. Group IV Cations
5. Group V Cations
6. Okso Anions
7. Halide Anions</td></tr>
<tr><td>Attribute Soft skill</td><td>Discipline, effort, collaboration, responsibility, and argumentation in the natural classroom setting</td></tr>
<tr><td>Recommended prerequisites</td><td>General Chemistry Laboratory</td></tr>
<tr><td>Study and examination requirements and forms of examination</td><td>Students are considered to be competent and pass if they get at least 50% of the maximum final grade. The final grade (NA) is calculated based on the following :

<table>
<tr><th>Assessment Components</th><th>Percentage Contribution</th></tr>
<tr><td>Pre-test/quiz</td><td>10%</td></tr>
<tr><td>Practical journal</td><td>20%</td></tr>
<tr><td>Practical skills</td><td>30%</td></tr>
<tr><td>Practical report</td><td>25 %</td></tr>
<tr><td>Final test</td><td>15%</td></tr>
<tr><td>Total</td><td>100%</td></tr>
</table>
Assignment and final semester test are carried out as an essay exam.</td></tr>
<tr><td>Learning Methods</td><td>Practicum</td></tr>
<tr><td>Media employed</td><td>Glass equipment includes beakers, test tubes, a drop pipette, test tube racks, and an e-learning system</td></tr>
<tr><td>Reading list</td><td>1. Svehla, B. 1998. Vogel’s Qualitative Inorganic Analysis. 7th ed. Longman Group Limited</td></tr>
</table>

	2. Skoog, D. A., West, D. M., Holler, F. J. 1996. Fundamentals of Analytical Chemistry. 7th ed. Saunders College Publishing 3. Mendham, J., Denney, R. C., Barnes, J. D., Thomas, M. 2000. Vogel's Textbook of Quantitative Chemical Analysis. 7th ed. Pearson Education Limited 4. Harris, D.C., 2010. Quantitative Chemical Analysis. New York: W.H. Freeman and Company 5. Schenk, G.H. and Ebbing, D.D. 1976. Qualitative Analysis And Ionic Equilibrium. Boston: Houghton Mifflin Company