Module Handbook

<table>
<tr><td>Module Name</td><td colspan="5">Analytical Chemistry</td></tr>
<tr><td>Module Level</td><td colspan="5">Higher Diploma</td></tr>
<tr><td>Code, if applicable</td><td colspan="5">VKD213</td></tr>
<tr><td>Subtitle, if applicable</td><td colspan="5">-</td></tr>
<tr><td>Courses, if applicable</td><td colspan="5">-</td></tr>
<tr><td>Semester(s) in which the module is taught</td><td colspan="5">2nd semester</td></tr>
<tr><td>Person responsible for the module</td><td colspan="5">Thorikul Huda, M.Sc.
Yuli Rohyami, M.Sc.</td></tr>
<tr><td>Lecturer</td><td colspan="5">Thorikul Huda, M.Sc.
Yuli Rohyami, M.Sc.</td></tr>
<tr><td>Language</td><td colspan="5">Bahasa Indonesia</td></tr>
<tr><td>Relation to curriculum</td><td colspan="5">Compulsory</td></tr>
<tr><td>Type of teaching, contact hours</td><td colspan="5">Flipped classroom-cooperative learning: (1) independent study: flipped classroom: google classroom; (2) face to face: cooperative learning; (3) structure activities: cooperative learning; (4) exam: 9.71 hours x 16 weeks per semester</td></tr>
<tr><td rowspan="3">Workload</td><td colspan="2">Total Workload</td><td colspan="3">136 hours; 3 CU</td></tr>
<tr><td></td><td>Independent study: flipped classroom</td><td>Face to face: cooperative learning</td><td>Structure activities: cooperative learning</td><td>Exam</td></tr>
<tr><td>Hours</td><td>42</td><td>35</td><td>42</td><td>17</td></tr>
<tr><td>Credit Points</td><td colspan="5">3 CU/5.03 ECTS</td></tr>
<tr><td>Requirements according to the examination regulations</td><td colspan="5">75% minimum requirements of attendance</td></tr>
<tr><td>Recommended prerequisites</td><td colspan="5"></td></tr>
<tr><td>Module objectives/intended learning outcomes</td><td colspan="5">PLO 3: Able to express basic concepts of chemistry, chemical analysis, operation and maintenance of chemical instruments that can be applied in their work
Subject LO:
1. Students are able to explain the stage of qualitative and quantitative analysis on chemical testing
2. Students are able to identify of types of errors in qualitative and quantitative analysis
3. Students are able to unit system, applying significant number rules in chemical measurement
4. Students are able to determine the types on anions and cations in the sample
5. Students are able to gravimetric analysis
6. Students are able to volumetric analysis</td></tr>
<tr><td>Content</td><td colspan="5">1. Qualitative and Quantitative Analytical Chemistry
2. Measurement
3. Qualitative Analysis of Anions and Cations
4. Gravimetric
5. Volumetric</td></tr>
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<tr><td rowspan="7">Study and examination requirements and forms of examination</td><td>Subject LO</td><td>Examination requirements and forms of examination</td><td>Percent</td></tr>
<tr><td>1</td><td>Quizzes, collaborative assignment, midterm exam</td><td>10</td></tr>
<tr><td>2</td><td>Quizzes, collaborative assignment, midterm exam</td><td>10</td></tr>
<tr><td>3</td><td>Quizzes, collaborative assignment, midterm exam, final exam</td><td>10</td></tr>
<tr><td>4</td><td>Quizzes, collaborative assignment, midterm exam</td><td>10</td></tr>
<tr><td>5</td><td>Quizzes, collaborative assignment, midterm exam</td><td>20</td></tr>
<tr><td>6</td><td>Quizzes, collaborative assignment, midterm exam, final exam</td><td>40</td></tr>
<tr><td>Media employed</td><td colspan="3">Google classroom, youtube, zoom meeting, google form, google slide, kahoot, mentimeter</td></tr>
<tr><td>Reading list</td><td colspan="3">1. Day, Jr., R.A. and Underwood A.L., 2002. Quantitative Analysis. Translated by: Aloysius Pudjaatmaka. Erlangga: Jakarta
2. Harvey, D., 2000. Modern Analytical Chemistry. 1st Edition, Mc Graw Hill : Boston
3. Fifield, F.W. and Kealey, D., 2000. Principles and Practice of Analytical Chemistry. Wiley-Blackwell, United Kingdom
4. Kennedy, J.H., 1990. Analytical Chemistry : Principle. Sounders College Publishing, New York
5. Khopkar, S., M., 2004. Basic Concepts Of Analytical Chemistry 2nd Edition, New Age International (P) Ltd., New Delhi, India
6. Mendham, J., Denney R.C., Barnes J. D., Thomas M.J.K., 2009. Vogel's Quantitative Chemical Analysis (6th Edition). Pearson education
7. Skoog D.A., West D.M., Holler F.J., 1996. Fundamentals of Analytical Chemistry. Saunders College Pub
8. Vogel, 1990. Qualitative Inorganic Analysis. Translated by: L Setiono and A. Hadyana Pudjaatmaka, 5th PT Kalman Media Pustaka: Jakarta</td></tr>
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