

Module Description

MPKP 427 Marine Chemistry

Module Name	Marine Chemistry
Module level, if applicable	Undergraduate Program
Code, if applicable	MPKP 427
Subtitle, if applicable	-
Course, if applicable	-
Semester(s) in which the module is taught	7 th Semester
Module coordinator(s):	Dr. Ajuk Sapar, M.Si
Lecturer	Dr. Ajuk Sapar, M.Si Dr. Andi Hairil Alimuddin
Language	Bahasa Indonesia
Relation to curriculum	Elective Courses for the Undergraduate Program in Chemistry
Type of teaching, contact hours	Decide teaching/training components for each course outcome ● Theory /Face-to-face lecture (for understanding): 5 lecture meetings ● Mid-semester evaluation: 1 ● Proposal Presentation of Project Base Learning(for communication skills): 3 ● Assignments: 1 ● Field Trip for the realisation of Project-Based Learning: 2 ● Final evaluation of Project-Based Learning: 2
Workload	<i>(Estimated) Total workload: 2 x 2.83 hours = 5.66 hours per week. Contact hours (lecture): 2 x 0.83 hours = 1.66 hours per week. Private study including examination preparation, specified in hours: 2 x 2 hours = 4 hours 2 x 50 minutes lectures, 2 x 60 minutes structured activity, 2 x 60 minutes individual activity, 79.33 total hours</i>
Credit points	2 (3.36 ECTS)
Requirements according to the examination regulations	Registered in this course Minimum 75% attendance in this course

Learning goals/competencies:	Intended Learning Outcomes (ILO) After taking this course, students will be able to: 1. LO-1 2. LO-2 3. LO-3 4. LO-5
Module objectives	1. Students can understand the potential of Indonesia's marine resources. 2. Students can identify Indonesia's aquatic environment's physical and chemical properties. 3. Students can identify groups of secondary metabolites from marine resources. 4. Students can understand analysis methods and the application of chemical equipment directly in the field.
Content:	1. Introduction to Marine Chemistry (1. Lecture contracts, Problems and potential of the ocean in chemical aspects, 2. From ocean exploration to marine research, and the development of various Indonesian expeditions) 2. Chemical properties of water and seawater (1. Basic properties of water, 2. Chemical components of seawater, 3. Sources of marine chemical compounds, 4. Salinity and chlorinity, 5. Contributors to climate change) 3. Main and trace elements in seawater (1. Sources and distribution of macro, micro, and trace elements, 2. Monitoring and pre-analysis handling of trace elements) 4. Contribution of life to marine chemical components (1. Biogeochemical cycles, 2. Ocean acidification, 3. The bleaching process on coral reefs) 5. Methods of analysis of seawater, sediment, and biological samples (1. Sampling and preservation techniques for seawater, sediment, and biota samples, 2. Seawater filtration techniques, 3. Determination of DO, BOD, and COD levels) 6. Marine natural product products (1. Diversity and distribution of Metabolites, primary and secondary, from marine natural materials, 2. Types of marine toxins, 3. Bioactivity of marine natural materials, 4. Isolation, synthesis, and application in Review)

	7. Team-Based Project Learning (A. Making of a Team-Based Project Proposal, B. Presenting the Team-Based Project Proposal, C. Preparing Field Practice in the Chemistry Laboratory, D. Implementing Lectures and Field Practice, E. Evaluation of Lecture / Field Practice Results, F. Presentation of Lecture / Field Practice Results. G. Final Evaluation of Team-Based Project Learning)												
Attribute Soft skills:	Discipline, collaboration, responsibility, and argumentation in the natural classroom setting												
Recommended prerequisites	-												
Study and examination requirements and forms of examination	Students are considered competent and pass if they at least get 50% of the maximum final grade. The final grade (NA) is calculated based on the following : <table border="1"> <thead> <tr> <th>Assessment Components</th><th>Percentage Contribution</th></tr> </thead> <tbody> <tr> <td>Participation</td><td>10%</td></tr> <tr> <td>Assignment</td><td>20%</td></tr> <tr> <td>Mid-semester test</td><td>30 %</td></tr> <tr> <td>Final semester test</td><td>40%</td></tr> <tr> <td>Total</td><td>100%</td></tr> </tbody> </table> Mid and final-semester tests are carried out as project exams.	Assessment Components	Percentage Contribution	Participation	10%	Assignment	20%	Mid-semester test	30 %	Final semester test	40%	Total	100%
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Participation	10%												
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Learning Methods	Face-to-face teaching method Project-based learning												
Media employed	whiteboard; powerpoint presentation; video presentation; e-learning system; marine biota and seawater												
Reading list	1. Anugerah Nontji, 2002. Laut Nusantara. Penerbit Djambatan. ISBN 979-428-598-3 2. Anugerah Nintji, 2009. Penjelasan dan Penelitian Laut Nusantara dari Masa ke Masa. Pusat Penelitian Oseanografi Lembaga Ilmu Pengetahuan Indonesia. Jakarta. 3. Atta-ur-Rahman. Study in Natural Product, ISBN: 978-0-08-044001-9, Volume 25, Part F, Pages 3-1035 (2001) 4. Bhakuni, D.S., <i>Central Drug Research Institute Lucknow, India</i> and D.S. Rawat <i>Department of Chemistry, University of Delhi, Delhi, India</i>. Bioactive Marine Natural Products, ISBN 1-4020-3472-5 (HB), ISBN 1-4020-3484-9 (e-book),												

	Co-published by Springer, 233 Spring Street, New York 10013, USA, with Anamaya Publishers, New Delhi, India 5. Hutagalung, H.P., D. Setiapermana, dan S.H. Riyono. 1997. Metode analisis air laut, sedimen dan biota. Pusat Penelitian dan Pengembangan Oseanologi, Lembaga Ilmu Pengetahuan Indonesia. Jakarta 6. Sahala Hutabarat dan Stewart M. Evans. 1985. Pengantar Oseanografi. Penerbit Universitas Indonesia (UI-Press) 7. Charles D. Amsler. 2008. Algal Chemical Ecology. Springer-Verlag Berlin Heidelberg
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