



UNIVERSITAS NEGERI YOGYAKARTA
 FACULTY OF MATHEMATICS AND NATURAL SCIENCES
 DEPARTMENT OF CHEMISTRY
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Bachelor of Science in Chemistry

MODULE HANDBOOK

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|---|--|-----|---|-----|--|-----|---|
| Module name: | Natural Product Chemistry | | | | | | |
| Module level, if applicable: | Undergraduate | | | | | | |
| Code: | KMA 6207 | | | | | | |
| Sub-heading, if applicable: | - | | | | | | |
| Classes, if applicable: | 2 | | | | | | |
| Semester: | 6 th | | | | | | |
| Module coordinator: | Prof. Dr. Sri Atun | | | | | | |
| Lecturer(s): | Prof. Dr. Sri Atun | | | | | | |
| Language: | Bahasa Indonesia and English | | | | | | |
| Classification within the curriculum: | Compulsory Subject | | | | | | |
| Teaching format / class hours per week during the semester: | 100 minutes lectures, 120 structured activities and 120 individual study per week | | | | | | |
| Workload: | Total workload is 90,67 hours per semester which consists of 100 minutes lectures, 120 structured activities and 120 individual study per week for 16 weeks | | | | | | |
| Credit points: | 2 SKS (3 ECTS) | | | | | | |
| Prerequisites course(s): | - | | | | | | |
| Course Outcomes | <p>After taking this course, the students are expected to be able to:</p> <table border="1" style="width: 100%;"> <tr> <td style="width: 10%;">CO1</td> <td>Analyzing theoretical concepts about chemical compounds in natural materials as a strategy to solve problems in society</td> </tr> <tr> <td>CO2</td> <td>Making biogenetic connections from compounds found in one family</td> </tr> <tr> <td>CO3</td> <td>Analyze the results of research on secondary metabolites from articles in the latest journals</td> </tr> </table> | CO1 | Analyzing theoretical concepts about chemical compounds in natural materials as a strategy to solve problems in society | CO2 | Making biogenetic connections from compounds found in one family | CO3 | Analyze the results of research on secondary metabolites from articles in the latest journals |
| CO1 | Analyzing theoretical concepts about chemical compounds in natural materials as a strategy to solve problems in society | | | | | | |
| CO2 | Making biogenetic connections from compounds found in one family | | | | | | |
| CO3 | Analyze the results of research on secondary metabolites from articles in the latest journals | | | | | | |
| Content: | <p>This course covers the classification, structure, nature, origin of biogenesis, biosynthesis, ways of isolation, and its identification which includes classes of terpenoid compounds, steroids, flavonoids, polyketides, polyphenols, alkaloids, as well as several examples of useful natural compounds, found in various families plant</p> <ol style="list-style-type: none"> 1. Definition of natural material compounds, classification, structure, properties, origin of biogenesis, biosynthesis, 2. Insulation methods, and identification of natural material compounds | | | | | | |

| | <p>3. Characteristics of terpenoid and steroid compounds</p> <p>4. Characteristics of flavonoid, polyacidide, polyphenol compounds</p> <p>5. Characteristics of alkaloid group compounds</p> <p>6. Characteristics of useful natural compound compounds found in various plant families</p> | | | | | | | | | | | | | | | |
|----------------------------|--|---|--------------------------------|--------------------------|----------------------|--------|---|----------------------|---|--------------------------------|--------------------------|-------|--|--|--|------|
| Study / exam achievements: | <p>Attitude assessment is carried out at each meeting by observation and/or self-assessment techniques using the assumption that basically every student has a good attitude. The student is marked very good or not good attitude if they show it significantly compared to other students in general. The result of attitude assessment is not taken into account in the final grades, but as one of the requirements to pass the course. Students will pass from this course if at least have a good attitude. The final mark will be weight as follow:</p> <table border="1"> <thead> <tr> <th>No</th> <th>CO</th> <th>Assessment Object</th> <th>Assessment Technique</th> <th>Weight</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>CO1, CO2, CO3,</td> <td>a. Assignments b. Activity c. Final Exam d. Midterm Exam</td> <td>Presentation / written test</td> <td>20% 20% 30% 30%</td> </tr> <tr> <td colspan="4">Total</td> <td>100%</td> </tr> </tbody> </table> | No | CO | Assessment Object | Assessment Technique | Weight | 1 | CO1, CO2, CO3, | a. Assignments b. Activity c. Final Exam d. Midterm Exam | Presentation / written test | 20% 20% 30% 30% | Total | | | | 100% |
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| 1 | CO1, CO2, CO3, | a. Assignments b. Activity c. Final Exam d. Midterm Exam | Presentation / written test | 20% 20% 30% 30% | | | | | | | | | | | | |
| Total | | | | 100% | | | | | | | | | | | | |
| Forms of media: | Handout, Board, LCD Projector, Laptop/Computer, Module | | | | | | | | | | | | | | | |
| References: | <ul style="list-style-type: none"> • Yan Zhang, 2020. Pharmacognosy: Current Herbal Medications and Natural Product Chemistry for a Pharm, 1st ed., Cognella Academic Publishing • Fifi M. Maacaron, 2015, Natural Beauty Alchemy: Make Your Own Organic Cleansers, Creams, Serums, Shampoos, Balms, and More (Countryman Know How), 1st ed., Countryman Press • Riaz A. Khan, 2018, Natural products chemistry: The emerging trends and prospective goals, <i>Saudi Pharmaceutical Journal</i>, 26(5), 739-753 • U.R. Lal and A. Singh, 2016, Chapter 8 - Recent Developments in Natural Product-Based Drug Discovery in Tropical Diseases, <i>Stud. Nat. Prod. Chem.</i>, 48, 263-285 • Grabley R.T., 1999, <i>Drug discovery from nature</i>, Springer-Verlag, Berlin • Sjamsul A.A. 1986. Buku Materi Pokok Kimia Organik Bahan Alam, Karunika, Jakarta, Universitas Terbuka • Harborne, J.B. 2006. <i>Metode Fitokimia: Penuntun Cara Modern Menganalisis Tumbuhan (alih bahasa: Kosasih Padmawinata & Iwang Soediro)</i>. Bandung : Penerbit ITB. | | | | | | | | | | | | | | | |

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| | <ul style="list-style-type: none"> • Artikel terbaru dari Jurnal Internasional: Phytochemistry; Organic chemistry; Natural product; etc |
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PLO and CO mapping

| | PLO | | | | | | | | | | |
|-----|----------|---------------|------|------|-----------|------|------|------|----------------|-------|--|
| | Attitude | General Skill | | | Knowledge | | | | Specific Skill | | |
| | PLO1 | PLO2 | PLO3 | PLO4 | PLO5 | PLO6 | PLO7 | PLO8 | PLO9 | PLO10 | |
| CO1 | | | | | √ | | | | | | |
| CO2 | | | | | | | √ | | | | |
| CO3 | | | | | | | | √ | | | |