



# THE MODULE HANDBOOK

Magister Biology Study Program

FACULTY OF BIOLOGY

## BIOCHEMISTRY OF ESSENTIAL OILS

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| <b>Course code</b>   | BIMB 202216  |
| <b>Course level</b>  | Magister   |
| <b>Semester/ term</b>  | Odd or Even  |
| <b>Course coordinator(s)</b>                                     | Dr. Woro Anindito Sri Tunjung, M.Sc.   |
| <b>Lecture(s)</b>  | <ol style="list-style-type: none"><li>1. Dr. Woro Anindito Sri Tunjung, M.Sc.</li><li>2. Prof. Dr. L. Hartanto Nugroho, M.Agr.Sc.</li><li>3. Dr. Ritmaleni (Faculty of Pharmacy) ...</li></ol>   |
| <b>Language</b>  | Bahasa Indonesia   |
| <b>Classification within the Curriculum</b>                      | Elective   |
| <b>Teaching format/ class hours per week during the semester</b> | This course is planned to have 14 teaching weeks and 2 weeks of examination.   |
| <b>Workload</b>  | Estimated working hour: 2 credits of theory  |
| <b>Credits</b>   | 2-0 credits  |
| <b>Requirements</b>  | -  |
| <b>Program Learning Outcome</b>                                  | <p>GS1: Develop logical, critical, systematic, and creative thinking through scientific research; develop scientific concepts and present the results based on scientific rules, procedures, and ethics in the form of theses and scientific publications.</p> <p>GS5: Use information technology in scientific development and implementing it in their area of expertise.</p> <p>SK2: Solve problems related to biological resources through an inter- and / or multidisciplinary approaches beneficial to society and scientific community.</p> |
| <b>Course Learning Outcome</b>                                   | <p>CLO 1: Students understand the facts, concepts, principles and theories that apply to essential oils in terms of biology and apply the biological concepts of essential oils to solve problems, and can integrate and evaluate information from various sources.</p> <p>CLO 2: Students understand the facts, concepts, principles and theories that apply to essential oils from a chemical side and apply the chemical concepts of essential oils to solve problems, and can integrate and evaluate information from various sources.</p>     |



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|                           | CLO 3: Students are skilled in communicating effectively, both written, oral and with tables and pictures and using communication and information technology, especially in the essential field as well as applying and integrating several essential phenomena into biology and its branches.   |
| <b>Course Description</b> | This course provides knowledge about the definition, types, classification of essential oils, plant sources and raw materials for producing essential oils; the benefits of various types of essential oils; techniques for extraction and refining of essential oils, analysis of chemical properties (chirality and stereochemistry of essential oils and bioactive compounds of essential oils and strategies for obtaining target compounds), as well as developing their use in various types and product formulations that can increase added value in the fields of health, pharmacy, beauty and aroma therapy. In addition, there is a strategy to produce bioactive compounds of essential oils through biotechnological engineering. |
| <b>Assessments</b>        | 1. Midterm: 35%<br>2. Final examination: 35%<br>3. Quiz and Paper assignment: 15%<br>4. Presentation: 15%  |
| <b>Study Media</b>        | Computer, internet access, smart phone   |
| <b>Literature</b>         | <ol style="list-style-type: none"><li>1. Jonathan Clayden, Nick Greeves, Stuart Warren, Organic Chemistry, Oxford University Press, 2001</li><li>2. K. H. C. Başer and G. Buchbauer, Handbook of Essential Oils: Science, Technology and Applications. Second Edition, CRC Press, Boca Raton, 2016</li></ol>   |