# THE MODULE HANDBOOK
## DOCTOR BIOLOGY STUDY PROGRAM
## FACULTY OF BIOLOGY

## SELECTED TOPIC FOR DISSERTATIONS

## Analytical Biochemistry

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| **Course code** | BIDB203117 |
| **Course level** | Doctoral Program |
| **Semester/ term** | Odd/even |
| **Course coordinator** | Prof. Dr. Rarastoeti Pratiwi, M.Sc |
| **Lecture(s)** | Prof. Dr. Rarastoeti Pratiwi, M.Sc.<br>Dr. Yekti Asih Purwestri, M.Si.<br>Dr. Tri Rini Nuringtyas, M.Sc.<br>Dr. Woro Anindito Sri Tunjung, M.Sc.<br>Prof. Dr. L. Hartanto Nugroho, M.Agr.Sc. |
| **Language** | Indonesian/English |
| **Classification within the Curriculum** | Compulsory |
| **Teaching format/ class hours per week during the semester** | This course is planned to have 14 teaching weeks and 2 weeks of examination. |
| **Workload** | 90 hours |
| **Credits** | 2-0 credits / 3.6 ECTS |
| **Requirements** | Receiving approval from the Supervisory Team. |
| **Program Learning Outcome** | CPL 1.2. Upon completing this program, the graduates demonstrate an attitude of being able to demonstrate honesty, responsibility, self-confidence, emotional maturity, ethics, and awareness of being a lifelong learner<br>CPL 3.1. After completing this program, the graduates will be able to discover or develop new scientific theories/concepts/ideas in biology |
| **Course Learning Outcome** | BIDB243019.1 By the end of this course, students will be able to develop an understanding of the relationships between facts, concepts, principles, and theories particularly those derived from the fundamental principles of biochemistry in order to comprehend and analyze biomolecules more comprehensively, and to elucidate biological phenomena.<br>BIDB243019.2 By the end of this course, students will be able to to apply biomolecular analysis methods to address relevant problems, and to integrate and critically evaluate information and data from various sources |

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| | regarding biomolecular analysis processes in living organisms.<br>BIDB243019.3 By the end of this course, students will be able to formulate and design appropriate research methodologies relevant to their dissertation work. |
| **Course Description** | This course provides an advanced exploration of biomolecular analysis, covering sample preparation techniques with an emphasis on ensuring data validity and accuracy through precise and accurate measurements. It addresses the influence of both micro- and macro-environmental conditions during biomolecular analysis, the importance of achieving sample homogeneity both in intact cells and extracted materials and the critical conditions affecting extraction, fractionation, and analysis of bioactive compounds. The course also includes techniques for the isolation and purification of DNA, RNA, and proteins, as well as radioisotope labeling and tracing. |
| **Assessments** | The assessment for Selected Topic for Dissertations (Analytical Biochemistry) is based on four components, with the respective criteria and weights:<br>1. Presentation Assignment (30%)<br>2. Mid-term Exam (20%)<br>3. Final-term Exam (20%)<br>4. Structured Assignment/task (20%)<br>5. Quiz (10%) |
| **Study Media and Literature** | **Main**<br>1. Wilson, K. And Walker, J. 2011. Principles and Technique of Biochemistry and Molecular Biology. Seventh Edition. Cambridge University Press (e-book)<br>2. Altemimi, A. Lakhssassi, N. Baharlouei, A, Watson, D.G. and Lightfoot, D.A. 2017.Principles and Technique of Biochemistry and Molecular Biology. Seventh Edition. Cambridge University Press (e-book)<br>**Additional**<br>1. Review: Phytochemicals: Extraction, Isolation, and Identification of Bioactive Compounds from Plant Extracts. MDPI (e-journal)<br>2. Course material from lecturer (PPT, Vidio, etc) and any journals related to topic |