**UNIVERSITAS NEGERI YOGYAKARTA**
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF CHEMISTRY
1 Colombo Street Yogyakarta 55281
Phone (0274) 565411, Ext. 1398, Fax (0274)548203
Website: http://kimia.fmipa.uny.ac.id, E-mail: kimia@uny.ac.id



| | |
|---|---|
| Module name: | Enzymology |
| Module level, if applicable: | Undergraduate |
| Code: | KIM6236 |
| Sub-heading, if applicable: | - |
| Classes, if applicable: | - |
| Semester: | 6th |
| Module coordinator: | Dr. Retno Arianingrum |
| Lecturer(s): | Dr. Retno Arianingrum |
| Language: | Bahasa Indonesia |
| Classification within the curriculum: | Elective Course |
| Teaching format / class hours per week during the semester: | Lectures: 100 minutes lectures, 120 structured activities and 120 individual study per week |
| Workload: | Total workload of the activity 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 | After taking this course, the students have ability to:<br>CO1. explain the fundamental concept of structure and function of enzyme<br>CO2. explain the enzyme kinetically<br>CO3. explain the mechanism of enzyme reaction, the process of enzyme isolation and the application of enzyme in industry |
| Content: | This course studies about the structure and function of enzymes, the understanding of enzymes, enzyme classification and enzyme nomenclature, enzyme monomers and oligomers, the factors that influence enzyme work, the kinetic of enzyme reaction: the molecular mechanisms of enzymatic reactions, the mechanisms of enzymatic reaction without cofactors, enzyme involvement in enzymatic reactions, the kinetics of enzymatic reaction with one substrate, relationship of initial reaction rate with concentration, inhibition, allosteric enzymes. Enzyme application in industry, isolation and purification of enzymes and immobilization enzyme. |
| Study / exam achievements: | The final mark will be weight as follow: |

| No | CO | Assessment Object | Assessment Technique | Weight |
|---|---|---|---|---|
| 1 | CO1, | Attitude & activity | Observation | |

| | | | | | |
|---|---|---|---|---|---|
| | | CO2, CO3. | Structural assignment: ability to rasionalize and describing | Assignment, Quiz | 30% |
| | | | Structural assignment: ability to applying the formula according to context | Assignment | |
| | | | Structural assignment: ability to collaborate, analyze, rasionalize, and communicate | Presentation & Discusion | |
| | | | Individual assignment: skill to collect literacy, understanding, and describing | | |
| | | | Mid term exam | Written test | 30% |
| | | | Final exam | Written test | 40% |
| | | | | Total | 100% |
| Forms of media: | Board, LCD Projector, Video, handouts, PPT slides, and stationaries | | | | |
| Reference: | A. Aditya Arya, Amit Kumar, Jayanti Jha. 2018. Understanding Enzymes: An Introductory Text 1st edition. New Delhi: Drawing Pin Publishing.<br>B. Peter K. Robinson. 2015. Enzymes: principles and biotechnological applications. Essays Biochem. 59: 1–41.<br>C. Kirikyali N, Connerton IF (2015) Xylan Degrading Enzymes from Fungal Sources. J Proteomics Enzymol 4:1. doi:10.4172/10.4172/2470-1289.1000118.<br>D. Aziz Darwis dan E. Sukara. 1990. Isolasi, Purifikasi dan Karakterisasi Enzim, Bogor: PAU Bioteknologi<br>A. Fersht, W, 1987. Enzym Structure and Mechanism. 2nd. New York : Freeman Company.<br>B. Palmer, T. 1991. Understanding Enzym. 3 th. Edition : Ellisherword<br>C. Guisan, Jose M.2006 .Immobilization of Enzymes and Cells, Publisher Humana Press<br>D. Price, C. N. And L. Stevens. 1984. Fundamentals of Enzymology. Oxford: Oxord University Press<br>E. Athel Cornish-Bowden, 2012, Fundamental of Enzyme Kinetics. New York, John Wiley and Sons. | | | | |

**PLO and CO mapping**

| CO | PLO | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Attitude | Generic Skills | | Knowledge | | | | Specific Skills | | |
| | PLO1 | PLO2 | PLO3 | PLO4 | PLO5 | PLO6 | PLO7 | PLO8 | PLO9 | PLO10 |
| CO1 | | | | | ✓ | | ✓ | | ✓ | |
| CO2 | | | | | ✓ | | ✓ | | ✓ | |
| CO3 | | | | | ✓ | | ✓ | | ✓ | |