



**LIST OF COURSES OFFERED TO INTERNATIONAL STUDENTS
NON-DEGREE PROGRAM
ODD SEMESTER, ACADEMIC YEAR 2026/2027
Faculty of Engineering - Universitas Indonesia**

Course Name: Biochemistry

Course Code: ENCH610022

Course Credits: 3

Degree	S1 Kls Internasional Teknik Kimia (Bachelor of Chemical Engineering)
Department/Study Program	Department of Chemical Engineering/Bachelor of Chemical Engineering
Type of Class	International
Language of Instruction	English
Lecturer Name	Retno Wahyu Nurhayati, S.TP., M.Eng., Ph.D.Eng.
Course Structure	Lecture, Project Based Learning
Course Overview	<p>Biochemistry is course designed to support students in mastering fundamental concepts of molecular biology and their applications in chemical engineering and bioprocess fields. This course focuses on the four major biomolecules of life—nucleic acids, proteins, lipids, and carbohydrates (polysaccharides).</p> <p>The course covers the structure, function, biosynthetic pathways, metabolism, analytical/detection methods, and industrial applications of these biomolecules. Additional topics include the scope of biochemistry, introduction to cells and tissues, membranes and organelles, the roles of DNA and proteins, cellular energy systems, DNA and RNA structure and replication, transcription and translation, amino acids, protein synthesis and structure, enzymes, and metabolism.</p> <p>Through this course, students are expected to understand the relationship between molecular structure and biological function and to apply molecular concepts within chemical engineering and bioprocess contexts.</p>
Course Key Words	biochemistry, molecular biology, nucleic acids, enzymes
Academic Goal	<p>Upon completion of this course, students will be able to:</p> <ol style="list-style-type: none"> 1. Explain the relationship between molecular structure and the chemical properties of biomolecules in living systems. 2. Describe the biological functions, biosynthetic processes, and metabolic pathways of nucleic acids, proteins, lipids, and polysaccharides.



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	<ol style="list-style-type: none"> 3. Explain analytical and detection methods for biomolecules. 4. Analyze the roles of biomolecules in cellular systems, including mechanisms of replication, transcription, translation, and energy metabolism. 5. Apply fundamental biochemical concepts to chemical engineering and bioprocess applications.
Course Schedule	<ol style="list-style-type: none"> 1. Week 1: Molecular Biology 2. Week 2: Lipid 3. Week 3: Lipid 4. Week 4: Biosynthesis 5. Week 5: Carbohydrates 6. Week 6: Carbohydrates 7. Week 7: Presentation 8. Week 8: Midterm Exam 9. Week 9: Nucleic Acids 10. Week 10: Nucleic Acids 11. Week 11: Nucleic Acids 12. Week 12: Protein 13. Week 13: Protein 14. Week 14: Protein 15. Week 15: Protein 16. Week 16: Final Exam
Textbooks, References, and Supplementary Materials	Lehninger Principles of Biochemistry & eBook by Albert Lehninger, David L. Nelson and Michael M. Cox
Grading Component	<p>Please describe the grading component. For example:</p> <ul style="list-style-type: none"> - Midterm Exam: 25% - Final Exam: 25% - Assignments: 40% - Quizzes: 10%
Other (i.e. Expectations on Classroom Conduct and Decorum etc.)	<p>For example:</p> <p>Students are expected to:</p> <ul style="list-style-type: none"> - Attend all classes regularly and on time. - Participate actively in discussions and learning activities.



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	<ul style="list-style-type: none">- Maintain respectful behavior toward instructors and peers.- Avoid any form of academic dishonesty (e.g., plagiarism, cheating).
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