

Kode Mata Kuliah	KI5077 / 3 SKS	
Penyelenggara	248 - Pengajaran Kimia / FMIPA	
Kategori	Kuliah	
	Bahasa Indonesia	English
Nama Mata Kuliah	Makromolekul dan Sintesis Organik	Macromolecule and Organic Synthesis

Bahan Kajian

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| <ol style="list-style-type: none"> 1. Struktur, tatanama, sifat fisik, sintesis dan reaksi kimia senyawa amina dan turunannya (sintesis Gabriel, aminasi reduktif, penataan ulang Hoffmann, penataan ulang Curtius, eliminasi Hoffmann). 2. Struktur, sifat fisik dan reaksi kimia asam amino dan protein, penentuan urutan asam amino pada rantai polipeptida, sintesis polipeptida. 3. Struktur, sifat fisik dan reaksi kimia karbohidrat. 4. Struktur, sifat fisik dan reaksi kimia senyawa bahan alam: asam nukleat dan lipid (asam lemak, trigliserida, fosfolipid, terpen, terpenoid, dan steroid). 5. Pengenalan analisis retrosintesis untuk sintesis senyawa organik sederhana | <ol style="list-style-type: none"> 1. Structure, nomenclature, physical properties, synthesis, and chemical reactions of amine compounds and their derivatives (Gabriel synthesis, reductive amination, Hoffmann rearrangement, Curtius rearrangement, Hoffmann elimination). 2. Structure, physical properties, and chemical reactions of amino acids and proteins, determination of amino acid sequence in polypeptide chains, polypeptide synthesis. 3. Structure, physical properties, and chemical reactions of carbohydrates. 4. Structure, physical properties, and chemical reactions of natural compounds: nucleic acids and lipids (fatty acids, triglycerides, phospholipids, terpenes, terpenoids, and steroids). 5. Introduction to retrosynthetic analysis for the synthesis of simple organic compounds. |
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Capaian Pembelajaran Mata Kuliah (CPMK)

1. Mampu menjelaskan sifat fisik senyawa organik melalui penggambaran struktur molekul, struktur resonansi, konformasi, dan/atau stereokimianya.
2. Mampu menentukan urutan asam amino penyusun polipeptida dan menguraikan sintesis polipeptida dari asam-asam amino penyusunnya melalui konsep proteksi-aktivasi dan SPPS (solid phase peptide synthesis).
3. Mampu menjelaskan sifat fisik dan kimia senyawa asam nukleat, karbohidrat, dan lipid melalui penggambaran struktur maupun reaksi dan/atau mekanisme reaksi kimia pada senyawa organik tersebut.
4. Mampu mengomunikasikan secara tulisan dan/atau lisan hasil eksperimen dan/atau hasil penelusuran literatur dengan mengedepankan etika dan kejujuran.
5. Mampu menguraikan analisis retrosintesis dan sintesis senyawa organik sederhana dengan menggunakan reaksi-reaksi substitusi, adisi dan eliminasi.
6. Mampu menyampaikan hasil eksperimen dan/atau hasil penelusuran literatur secara tulisan dan/atau lisan dengan mengedepankan etika dan kejujuran.

1. Able to explain the physical properties of organic compounds through the depiction of molecular structure, resonance structure, conformation, and/or stereochemistry.
2. Able to determine the sequence of amino acids composing polypeptides and describe the synthesis of polypeptides from their constituent amino acids through the concepts of protection-activation and SPPS (solid phase peptide synthesis).
3. Able to explain the physical and chemical properties of nucleic acids, carbohydrates, and lipids through the depiction of their structure as well as the reactions and/or reaction mechanisms of these organic compounds.
4. Able to communicate experiment results and/or literature review findings in writing and/or verbally, emphasizing ethics and honesty.
5. Able to describe retrosynthetic analysis and the synthesis of simple organic compounds using substitution, addition, and elimination reactions.
6. Able to present experiment results and/or literature review findings in writing and/or verbally, emphasizing ethics and honesty.

Metode Pembelajaran

Ceramah Tutorial Diskusi, presentasi kelompok
Praktikum

Lecture Tutorial Discussion, group presentation
Practical/lab work

Modalitas Pembelajaran	Luring Sinkron Daring Asinkron Praktikum di laboratorium	Offline Synchronous Online Asynchronous Laboratory practical (Lab work)
Jenis Nilai	ABCDE	
Metode Penilaian	<p> Nilai Akhir = 75% x ((UTS (35%) + UAS (35%) + tugas presentasi 20% + rata-rata tugas mandiri dan Kuis (10%)) + 25% x nilai praktikum INDEKS NILAI: 75 ≥ A; 75 < AB ≤ 68; 68 < B ≤ 60; 60 < BC ≤ 55; 55 < C ≤ 50; 50 < D ≤ 45; 45 < E </p>	<p> Final Grade = 75% x ((midterm Exam (35%) + final Exam (35%) + presentation assignment (20%) + average of independent assignments and quizzes (10%)) + 25% x lab work grade GRADE INDEX: 75 ≥ A; 75 < AB ≤ 68; 68 < B ≤ 60; 60 < BC ≤ 55; 55 < C ≤ 50; 50 < D ≤ 45; 45 < E </p>

Catatan Tambahan