

Introduction into Analysis of Organic Compounds, Synthesis of Drugs and Natural Compounds

Lecture-Nr.: 53741

Type: lecture

Duration: 3 hours per week

Method of Assessment: written examination

ECTS Credit Points: 3

Topics:

The lecture in the 3rd semester (winter) and exercises in the 4th (summer) constitute an integrated course package, performed in German language. The course provides basic knowledge of mechanisms in organic chemistry with special focus on the synthesis of natural products and drugs. The possibility for a written examination is given after successful participation of the exercises performed in the 4th semester.

1. Selected drugs – an overview. 2. Special position of the element carbon. 3. Important functional groups. 4. Lewis-acids and Lewis-bases. 5. Chemical Reactions. 6. Chemical bonding. 7. Inductive effect. 8. Mesomeric effect. 9. Tautomerism 10. Classification of reactions in organic chemistry. 11. Nucleophilic and elektrophilic reactions. 12. Carbocations. 13. Carbanions. 14. Carbenes. 15. Nitrenes. 16. Dependence of stability. 17. Isomers. 18. Nucleophilic substitutions. 19. Free Radikals. 20. Elimination. 21. Reactions of Carbocations. 22. Reactions of Carbanions. 23. Mannich reaction. 24. Michael reaction. 25. Robinson annulation. 26. Grignard reaction. 27. Wittig reaction. 28. Vinylogy. 29. Addition to unsaturated bonds. 30. Aromatic compounds. 31. Aromatic substitution. 32. Heteroaromatic compounds. 33. Cycloadditions; [4+2] Cycloaddition; Diels-Alder reaction. 34. Oxidation. 35. Haloform reaction / Synthesis of carboxylic acids. 36. Reduction. 37. Dicarboxylic acids. 38. Enamines and Imines. 39. Formation of Oximes, Semicarbazones, and Hydrazones. 40. Overview: Reactivity and stability. 41. Synthesis of important heterocycles. 42. Synthesis of selected drugs. 43. Formation of DNA-Crosslinks.

Literature:

1. Vollhardt; Schore: Organische Chemie (German and English edition).
2. Bruice: Organische Chemie, (German and English edition).

Contact Information:

Prof. Dr. Siavosh Mahboobi

Department of Pharmaceutical and Medicinal Chemistry I

Phone +49 941 943-4824

E-mail Siavosh.Mahboobi@ur.de