Application of Modern NMR Methods

Schedule:

Week 1: Introduction. Overview of basic NMR concepts and spectral parameters.

Week 2: Classical and advanced homonuclear 2D NMR methods (COSY, TOCSY, NOESY, ROESY).

Week 3: Applications of heteronuclear 2D NMR methods (HSQC, HMBC, HSQMBC, HSQC-TOCSY, HSQC-CLIP-COSY) in modern structural research.

Week 4: Applications of heteronuclear 2D NMR methods (continued).

Week 5: Proton–proton decoupled ("pure shift") NMR experiments: possibilities for improving resolution.

Week 6: Overview of various water-suppression techniques; discussion of advantages and disadvantages through biological H_2O-sample examples.

Week 7: Metabolomics: fundamentals of systematic metabolite analysis; one- and multidimensional NMR applications.

Week 8: Metabolomics (continued): one- and multidimensional NMR applications.

Week 9: NMR methods for studying protein structure.

Week 10: NMR-based analysis of protein therapeutics in the pharmaceutical industry.

Week 11: Detection and characterization of ligand–protein interactions using NMR spectroscopy.

Week 12: Detection and characterization of ligand–protein interactions using NMR spectroscopy (continued).