

# THE COURSE

## LEARNING OUTCOMES

- Synthesis of magnetic nanoparticles
- Functionalization of magnetic nanoparticles
- Conjugation of antibodies to magnetic nanoparticles
- Use of nanoparticles in proteomics: Simplifying the proteome.
- Mass spectrometry-based proteomics
- Protein identification & quantification

## COURSE OUTLINE

### *Nano-synthesis and characterization*

- Synthesis of magnetic nanoparticles
- Antibody functionalization of magnetic nanoparticles
- Characterization of magnetic nanoparticles by DLS and Z-potential

### *Proteomics*

- Proteome extraction, clean-up and total protein quantification
- Nano-immunoaffinity purification and proteome fractionation
- Proteomics sample preparation: 1D-Gel electrophoresis
- Proteomics sample preparation: in-gel and in-solution digestion
- Protein identification and quantification by mass spectrometry
- Bioinformatics