

**Course contents for Techniques in Proteomics and Metabolomics**

**1. Faculty:** FLSB

**2. Course Code:**

**3. Course Title:** Techniques in Proteomics and Metabolomics

**4. Number of Credits:** Two

**5. Course objectives:**

Proteomics and Metabolomics have emerged as important disciplines and powerful analytical tools in the last decade. Recent years have seen enormous growth in the use of these techniques for solving biological problems. Students will be acquainted with high-end techniques used for identification and characterization of proteins and metabolites. Understandings will be provided on high-throughput OMICS techniques.

**6. Minimum prerequisites for taking this course, if any:**

Basic knowledge of protein chemistry, biomolecules and metabolic pathways is expected.

**7. Course structure with units, if applicable:**

- a. Mass Spectrometry in OMICS technology
- b. Proteome analysis and peptide mass fingerprinting
- c. Functional Proteomics
- d. Methods in metabolomics
- e. Metabolite identification and structural analyses

**8. Reading suggestions:**

1. Mass Spectrometry (2018), James M. Thompson
2. Mass Spectrometry, a textbook (2004), Jurgen H. Gross
3. Mass Spectrometry, principles and applications (2007), Edmond de Hoffmann and Vincent Stroobant
4. Proteomics, Methods and Protocols (2009), Reinders and Sickmann
5. Proteomics, targeted technology, innovations and applications (2014), Manuel Fuentes and Joshua LaBaer
6. Separation Methods in Proteomics (2006), Gary B. Smejkal and Alexander Lazarev
7. Metabolomics, Methods and Protocols (2007), Weckwerth, Wolfram (Ed.)
8. Thematic issues, research and review articles in the field.

**9. Evaluation:**

Mid-semester Written Examination: 30% Marks

End-semester Written Examination: 30% Marks

Presentation: 20% Marks

Quiz/Assignment/other: 20% Marks