

Course contents for Chemical Biology

1. Faculty: FLSB

2. Course Code:

3. Course Title: Chemical Biology

4. Number of Credits: Two

5. Course objectives:

Natural products possess interesting biological activity and chemical structures. This course would provide understanding of these metabolites, their biosynthesis, properties and diversity. Students will be acquainted with high-end techniques used for identification and characterization of unknown molecules. Understandings will also be provided on methods for manipulation of biological systems for generation of unnatural natural bioactive compounds. Insights will be provided on identification of novel pathways for natural product biosynthesis.

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

Basic knowledge of biochemical pathways, protein chemistry and genetic engineering is expected.

7. Course structure with units, if applicable:

- a. Natural product diversity and biosynthesis
- b. Modes of multienzymatic catalysis
- c. Metabolite identification and characterization
- d. Synthetic biology and combinatorial biosynthesis
- e. Novel Pathway Discovery

8. Reading suggestions:

1. Natural Products in Chemical Biology (2012), Natanya Civjan
2. Mass Spectrometry (2018), James M. Thompson
3. Synthetic Biology, A primer (2012), Freemont and Kitney
4. Metabolomics, Methods and Protocols (2007), Weckwerth, Wolfram
5. Proteomics, targeted technology, innovations and applications (2014), Manuel Fuentes and Joshua LaBaer
6. Asymmetric Synthesis of Natural Products (2nd Edition), Koskinen
7. Thematic issues, research and review articles in the field

9. Evaluation:

Mid-semester Written Examination	:	40% Marks
End-semester Written Examination	:	40% Marks
Quiz/Assignment/Presentation (poster/oral)	:	20% Marks