1-2-2046
Syllabus Analysis of Biological Networks
 2.5credits

Fait Aaron

1. **Networks**
    1.1. **Introduction or "Why should we care about networks?"**
    1.2. **Networks in Biology**
    1.3. **Properties of Biological Networks**
    1.4. **Excerpts from Barabasi legacy**

2. **Graph Theory**
    2.1. **Graphs and their properties**
    2.2. **Representation and Algorithms**

3. **Global Network Analysis or "how to make sense of it all?"**
    3.1. **Global and Local Properties**
    3.2. **Models of Complex Networks**
    3.3. **Statistics of Net properties**

4. **Network Motifs**
    4.1. **Detection of Motifs**
    4.2. **Tools for Motifs Analysis**

5. **From theory to real life**
    5.1. **Signal Transduction and Gene Regulation Networks**
    5.2. **Protein Interaction Networks**
    5.3. **Metabolic Networks**
    5.4. **Ecological Networks**
    5.5. **Phylogenetic Networks**
    5.6. **Correlation Networks**

Readings

The Regulation of Cellular Systems, Heinrich and Schuster
Analysis of Biological Networks, Junker and Schreiber
Systems Biology, Palsson