

**ENGINEERING PRINCIPLES IN BIOTECHNOLOGY**  
**Course No. 336405**

**Instructors:** *Prof. Dror Seliktar (Room 168, phone 04-829 4805)*

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**Office Hours:**

Prof. Seliktar: by appointment

Mrs. Lev: by appointment

**Suggested Texts:**

1. Molecular cell biology / Harvey Lodish, 5th ed. 2004
2. Molecular biotechnology : principles and applications of recombinant DNA, Bernard R. Glick and Jack J. Pasternak, 2nd ed. 1998

**Grading:**

Final Exam: 90%

Homework: 10%

**Course Outline:**

- Introduction
- Principles of microscopy
- Fluorescence microscopy (Light sheet fluorescence microscopy (LSFM))
- Atomic Force Microscopy (AFM)
- Scanning electron microscope (SEM) & Transmission electron microscopy (TEM)
- Immuno-based techniques
- Immunoprecipitation
- Immunoblotting , ELISA & IOD (integrated optical density)
- Flow Cytometry and Sorting
- Protein separation and purification
- Gene Arrays
- Recombinant technologies
- DNA Transfection
- DNA Sequencing
- Genome engineering: CRISPR
- IN Cell Analyzer systems
- Proteomics