



# Full Syllabus



<b>Course Title</b>	
Environmental Aspects of Bioengineering	
<b>Lecturer</b>	
Prof. Alexander Golberg	
<b>Semester</b>	
A	
<b>Course requirements</b>	
Attendance is mandatory in all classes.	
<b>Final grade components</b>	
Debate 10% Paper presentation and discussion lead 10% Final project presentation 20% Final test 60% Bonus 5% Critical review on 2 papers.	
<b>Course schedule</b>	
Class no. / Date	Subject and Requirements (assignments, reading materials, tasks, etc.)
1	Introduction to environmental bioengineering
2	Building blocks of living systems: atoms, molecules, proteins, RNA, DNA, enzymes, small metabolites (amino acids, sugars...)
3	Building blocks of living systems: cells, tissues, organs, tissues, organisms, population, eco-system. Including microorganisms
4	Analytical methods Units of measurements: mole, g, joule, Einstein, organisms, speed, energy, mass, active units, density, rate, biodegradability, precision, accuracy, specificity, false positive, negative, tools to study building blocks
5	Environmental biochemodynamic processes: material, energy and information flow [horizontal gene transfer]
6	Systems science, biological index of health, indicator. Approach to system research
7	Genetic engineering, Systems biology, Synthetic Biology
8	Risk analysis, environmental risks of biotechnologies
9	Applications: Bioremediation
10	Applications: Medical Bioengineering
11	Applications: Agricultural Bioengineering / Industrial, Bioterrorism, WareMarine and all others
12	Environmental management of biotechnologies [LCA and other methods of impact assessment] Process redesign. Treatment technologies. Regulation.
13	Final projects presentation



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