

Proposed Course

- Title:** Applied Cell and Molecular Biology
- Units:** 12
- Number:** 38-709
- Term:** Spring semester
- Target audience:** First-year students in the Biotechnology Track of the M.B.A. program at the Tepper School.
- Course Description:** This course will examine applications of modern cell and molecular biology, with emphasis on commercial products and processes. The course will include a basic background in the major topics that would be covered in courses on prokaryotic and eukaryotic molecular biology and molecular cell biology. The course is intended for non-specialists who seek an understanding and appreciation of fundamental concepts without the analysis of experimental detail that would support the development of concepts in a course for the specialist. The course will draw on the patent literature as a source of commercial applications of biological discoveries. Examples of topics that might be included are:
- diagnostic and therapeutic monoclonal antibodies (e.g., Herceptin)
 - therapeutic proteins (e.g, colony stimulating factors, erythropoietin, hormones)
 - antibiotics
 - subunit molecular vaccines
 - amino acid fermentations
 - enzyme-based processes for chemical synthesis
 - gene therapy
 - stem cells and regenerative medicine
 - herbicide tolerant plants
 - microbial diagnostics (e.g., multilocus sequence typing)
 - transgenic animals
 - DNA fingerprinting
- Prerequisites:** A basic science background, including skills in biology and chemistry; preferably a college-level course in biochemistry. Other students interested in the course may enroll with permission of the instructor.

Possible Text:

Introduction to Biotechnology
Thieman & Palladino
Benjamin Cummings/Pearson Education, Inc. 2004
(This could also be used as the text in 38-710, Introduction to
Biotechnology.)

References:

Molecular Biology of the Cell, 3rd/4th Edition
Alberts, Bray, Lewis, Raff, Roberts & Watson
Garland Publishing, Inc. 2005

Molecular Biology of the Gene, 5th Edition
Watson, Baker, Bell, Gann, Levine & Losick
Benjamin Cummings 2004