

**BiS 521 - Biology for Engineers**  
Prof. Je-Kyun Park  
Room 2204, IE Building  
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**Spring 2003**  
Room 1226, IE Building  
Mon, Wed 10:30-12:00  
<http://nanobio.kaist.ac.kr>

## **BiS 521**

### **Biology for Engineers**

#### **Synopsis**

This course deals with biology fundamentals and associated subjects required for engineers to understand and acquire multidisciplinary technology in the fused areas of biological sciences and engineering. To accommodate those who do not have the biological background, the course covers the biological principles and engineering applications of general biology including: biochemistry, genetics, and physiology. Subsequently, special emphasis is placed on applying engineering concepts to biological problems.

#### **Credit**

3 units (3:0:3)

#### **Prerequisite**

Senior or Graduate standing is required. Recommended for graduate students without the biological background.

#### **Grading**

Quiz and Homeworks (40%)  
Midterm Exam (30%)  
Final Exam (30%)

#### **Office Hours**

Mon, Wed 13:00-14:30

#### **TA**

Joo Hun Kang (Tel. 4355, [kohinoor7@mail.kaist.ac.kr](mailto:kohinoor7@mail.kaist.ac.kr))

#### **Textbook**

1. Campbell, N.A., Reece, J.B., Mitchell, L.G., and Taylor, M.R. (2003). *Biology: Concepts and Connections*, Fourth Edition, Benjamin Cummings., Pearson Education, inc.
2. Vander, A., Sherman, J., Luciano, D. (2001). *Human Physiology*, Eighth Edition, The McGraw-Hill Companies, Inc.

#### **Class Web page**

<http://nanobio.kaist.ac.kr>

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Lecture Schedule

Week	Topics	Contents
1	Introduction	Course Outline
2	Biological Chemistry, Cellular Structure & Function, Gene Regulation & Control, and Biotechnology	Biological Molecules
3		Cell Structure and Membranes
4		Protein and Cellular Metabolism
5		Chromosomes and Human Genetics
6		DNA Structure and Gene Expression
7		DNA Technology and Diagnostics
8	<i>Summary &amp; Midterm Exam.</i>	
9	Animal Systems, Biological Control Systems, Human Physiology	Neural Control Mechanisms
10		The Sensory Systems
11		Hormonal Control Systems
12		Muscle and Molecular Motors
13		Cardiovascular Systems
14		Immune Defense Mechanisms
15	Bioengineering Fundamentals	Systems Bioengineering
16	<i>Summary &amp; Final Exam.</i>	