Dept. of Bio and Brain Engineering
Korea Advanced Institute of Science and Technology (KAIST)

HSS 189 **Fall 2012**

Prof. Je-Kyun Park
Room 1119, E16 Building
jekyun@kaist.ac.kr (Tel.4315)

Room 220, E16 Building
Wed 15:00-16:00
http://nanobio.kaist.ac.kr

HSS 189 Freshman Seminar 2 (새내기 세미나2)

Synopsis
This course provides an introduction to the basic integrative bioengineering for undergraduate students. By introducing recent research areas in bioengineering to freshman upon entrance to college, this course helps them choose their specific majors. This course also covers the most up-to-date application of nanotechnology to the life sciences.

Credit
1 units (1:0:1)

Recommended Prerequisite
None.

Grading
Attendance (10%) and Participation (90%). The class participation grade will be based on student participation in seminar discussion, preparation for class, and completion of assigned readings and other assignments.

Office Hours
Wed 14:00 - 15:00

Teaching Assistants
Young Lee (youngleekaist@kaist.ac.kr, Tel: 4355, Room 802, E16)

Textbook
List of references and reading materials will be presented at class.

References
1. Acquaah, G.(2004). Understanding Biotechnology: An Integrated and Cyber-Based Approach, Pearson Prentice Hall, ISBN: 0130945005
2. Ratner, M. Ratener, D. (2003) Nanotechnology A Gentle Introduction to the Next Big Idea, Prentice Hall, ISBN: 0131014005
3. National Research Council (2009), A New Biology for the 21st Century, The National Academies Press, Washington, D.C., ISBN-13: 978-0-309-14486-5 (PDF)

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Lecture Schedule

Week	Topics	Contents	Chapter
1	*I. Introduction*	Course Outline	
2		Integrative Bioengineering?	
3	*2. Enabling Technologies of Bioengineering*	Personalized medicine: The potential of regenerative medicine	
4		Biomimetics & Bioinspiration: Learning from the gecko's tail	
5		Student Activities I	
6		Student Activities II	
7		Movie I, Innerspace I	
8	*Midterm Exam. Period*		
9	*3. Application Areas*	Movie II, Innerspace II	
10		Biomaterials: The magnificence of spider silk	
11		Tissue Engineering: Printing a human kidney	
12		Lab-on-a-chip: A lab the size of a postage stamp	
13		Sensor and robot: My seven species of robot	
14		Brain Science and Engineering: Reengineers a brain	
15		Synthetic Biology/ Neurobiology: A light switch for neurons	
16	*Final Exam. Period*		