Department of BioSystems
Korea Advanced Institute of Science and Technology

**BiS 500 - Bioinformation & Bioelectronics** **Spring 2005**

Professors: J.Bhak, J.C.Ye, J.K.Park
Office: 1115, 1107, 1119 E16 Building
Phone: 4318, 4320, 4315
E-mail: biopark@kaist.ac.kr, jong.ye@kaist.ac.kr, jekyun@kaist.ac.kr

Rm. 220, E16 Building
Mon, Wed 10:30-12:00
http://biosys.kaist.ac.kr

# BiS 500 Bioinformation & Bioelectronics

**Synopsis**

This course is designed to give graduate students an in-depth acquaintance with the emerging interdisciplinary research field of BioSystems. Special emphasis will be placed on the research methods, trends and applications of three major interdisciplinary areas: BioInformation System, BioElectronic System, and BioNano/Micro System. Three instructors discuss fundamental issues and perspectives of the novel interdisciplinary research areas, where biology, medicine, information science, electronics, and mechanical engineering are converged and integrated.

**Credit**

3 units (3:0:3)

**Prerequisite**

Graduate standing, BiS 521, BiS 523 or instructors' consent is required.

**Grading**

Homework & Quiz (40%), Three Exam. (60%)

**Office Hours**

Mon, Wed 13:00-14:30

**TA**

Han Sol Choi (apine@kaist.ac.kr, 5358) for BioInformation System
Jin Wook Jung (lovecjww@kaist.ac.kr, 4351) for BioElectronic System
One Zero Choi (deep@kaist.ac.kr, 4355) for BioNano/Micro System

**Textbook**

Lecture Notes, Handouts and Selected Papers

**References**

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

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# BiS 500 Bioinformation & Bioelectronics

Prof. Jonghwa Bhak, Je-Kyun Park, Jong Chul Ye

Spring 2005

Lecture Schedule

| Week | Topics | Contents |
|---|---|---|
| 1 | Introduction | Course Overview |
| 2 | BioInformation System | Basic concepts and tools of BioInformation processing |
| 3 | | Biological Sequence & Structure Analysis |
| 4 | | Interactomics |
| 5 | | Network Biology/ Exam #1 |
| 6 | BioNano/Micro System | Nano and Micro Systems Technology |
| 7 | | μ-TAS and Bio-fluidic Devices |
| 8 | | *Midterm Exam. Period (No Class)* |
| 9 | | Biological Nano/Micro Devices |
| 10 | | Nanobiotechnology & Bio-inspired NEMS/ Exam #2 |
| 11 | BioElectronic System | Biosignal Measurements |
| 12 | | Biosignal Processing |
| 13 | | Neural Systems and Learning Models |
| 14 | | Biomedical Imaging/ Exam #3 |
| 15 | Summary | |
| 16 | *Final Exam. Period (No Class)* | |