

BiS 572

Prof. Je-Kyun Park
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Fall 2006

Room 205, E16 Building
Wed 13:00-15:00 (lecture), 15:00-18:00 (Lab.)
<http://nanobio.kaist.ac.kr>

BiS 572 Microtransducers and Laboratory

Synopsis

This course discusses working principles, materials, configurations and performance specifications of microtransducers based on MEMS technology. On these basis, experiments using mechanical, electrical, optical, thermofluidic and biochemical microtransducers, are provided.

Credit

3 units (2:3:3) (This course is mutually recognizable between Bachelor or Master programs.)

Recommended Prerequisite

BiS 350 or equivalent.

Grading

Pre-report 15%, Main-report 35%,
Term Project 40%, Attendance 10%

Office Hours

Wed 10:30-12:00

Teaching Assistants

Seong-Sik Jo (seong-sik.jo@kaist.ac.kr, Tel: 5355, Room 802, E16)
Wonjae Choi (deep@kaist.ac.kr, Tel: 5355, Room 802, E16)

Textbook

None, Hand-out.

References

1. G.T.A. Kovacs (1998). Micromachined Transducers Sourcebook, McGraw-Hill Science/Engineering/Math, ISBN: 0072907223
2. I. Willner, E. Katz (eds.) (2005). Bioelectronics: From Theory to Applications, Wiley-VCH Verlag GmbH & Co. KGaA, ISBN: 3527306900

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Lecture Schedule

Week	Topics	Contents	Lab.
1	<i>I. Introduction</i>	Course Outline	1
2	<i>II. Fundamentals of Bioinstrumentation</i>	Basic Electronics	2
3		Data Acquisition System	3
4		Computer-Sensor Interfacing	4
5		LabView Programming	5
6		<i>III. Microfluidic Devices</i>	Microfluidic Sensor
7	Microfluidic Sensor		7
8	<i>Midterm Exam.</i>		
9	<i>IV. Optical Transducers</i>	Optical Sensor	8
10		Optical Sensor	9
11	<i>V. Biochemical Transducers</i>	Electrochemical Sensor	10
12		Electrochemical Sensor	11
13		Immunosensor	12
14	<i>VI. Term Project</i>	Term Project	
15		Term Project	
16	<i>Final Exam.</i>		