

Syllabus

(Fall Semester, 2016)

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|-------------------|--|---|---|
| Course Title | Advanced Nanobiotechnology | Level | Graduate |
| Course No. | 458.672 | No. of Credit | 3 |
| Instructor | Prof. Tai Hyun Park in Chem. & Biol. Eng. thpark@snu.ac.kr , 880-8020 | Office Hour | Tue & Thu 16:00-17:00 (Room 918, Building 302) |
| Website | http://biotech.snu.ac.kr | Course Category | Elective |
| Lecture Time | Tue & Thu 14:00-15:15 | Lecture Room | Room 620 Building 302 |
| TA | Jin Yoo (Room 608 Building 302) | | |
| Course Overview | This course provides the basic principles and characteristics of nanotechnology and biotechnology. This course focuses on the development and applications of the convergence technology, which can be achieved by combining these two technologies. | | |
| Course Objectives | <ol style="list-style-type: none"> 1. Understanding of principles of nanotechnology and biotechnology 2. Understanding of the characteristics of convergence technology and their application | | |
| Text & Reference | Text | Lecture note | |
| | Reference | C. M. Niemeyer and C. A. Mirkin, "Nanobiotechnology", Wiley-VCH (2004) C. A. Mirkin and C. M. Niemeyer, "Nanobiotechnology II", Wiley-VCH (2007) | |
| Grades | <ol style="list-style-type: none"> 1. Attendance (10%) 2. Midterm Exam (45%) and Final Exam (45%) | | |

Calendar

| Week #/(Month/Day) | Topics | Instructor |
|-----------------------|--|---------------------|
| 1 (9/1) | Introduction to nanobiotechnology | TH Park |
| 2 (9/6, 8) | Biomolecules & DNA nanotechnology | TH Park |
| 3 (9/13) | Nanoparticle, nanowire & nanotube | TH Park |
| 4 (9/20, 22) | Gold nanoparticles as colorimetric probes | WC Park |
| 5 (9/27, 29) | Transplantation of the nanobioelectronics | JM Seo |
| 6 (10/4, 8) | Nanoparticle, nanowire & nanotube | TH Park |
| 7 (10/11, 13) | Basic concept and recent research trends in nanomedicine from the view point of tissue engineering | KW Lee |
| 8 (10/18) | Nanobioelectronic nose | TH Park |
| (10/20) | Midterm Exam | |
| 9 (10/25, 27) | Molecular Imaging and Theranostics Organ-on-a-Chip | CH Ahn N Jeon |
| 10 (11/1, 3) | Nanobioelectronic tongue Nanobiomaterials for stem cells | TH Park BS Kim |
| 11 (11/8, 10) | MRI and Theranostics using Nanoparticles Biosensor | TH Hyeon TH Park |
| 12 (11/15, 17) | Single cell genomics for customized medicine | SH Kwon |
| 13 (11/22, 24) | Programmable nano assembly using multivalent biopolymers | YK Song |
| 14 (11/29, 12/1) | Nanobiomaterials for stem cell and tissue engineering | N Hwang |
| 15 (12/6, 8) | Stretchable Bio-Electronics | DH Kim |
| (12/13) | Final Exam | |