Course Title		Introduction to Bio-Related Systems
Registration Code		L100170001
Number of Credits		2
Years of Eligible Graduate Students		1~2
Semester		2nd
Period		Wed. 1st
Room		B5-1B-34 (Nakamozu Campus, OPU), B115 (CPU: Distant lecture)
Instructors		Atsushi Harada
Office hours		Fri. 16:15-17:45, Bldg. B5, Room 5A-02
Contact		harada@chem.osakafu-u.ac.jp
Goals of the course		This course starts from the basics of biopolymers and molecular assemblies, which include polysaccharides, proteins, nucleic acids and lipid membranes, and proceeds to their possible application to functional materials and biomaterials.
Textbooks		Printed matters will be distributed.
Books of reference		"Biomaterials Science" Third Edition. ed. by B.D. Ratner, A.S. Hoffman, F.J. Schoen, and J.E. Lemons (Academic Press)
Allied subject		Advanced Biopolymer Chemistry
Homework (Preparing for the classwork)		The lecture is difficult for students to understand and fix the details in their mind only in the class. They should review the subjects described in the printed papers and understand the key words by technical books and articles.
Course outline		This course consists of the following topics: 1. Structures and functions of cells; 2. Molecular assemblies with biofunctions; 3. Biofunctional Polymers; 4. Application of biopolymers in medicine; 5. Polymeric materials for drug delivery; 6. Polymeric materials for gene delivery; 7. Concept of biomaterials; 8. Interaction between biomaterials with biocomponents; 9. Antithrombotic materials; 10. Polymeric membranes in medicine; 11. Polymeric gels in medicine; 12. Nanobiomaterials
Class schedule	1st	Concept of Biomaterials
	2nd	Biocomponents and biomaterials
	3rd	Interactions between biomaterials and biocomponents
	4th	Antithrombotic materials (1)
	5th	Antithrombotic materials (2)
	6th	Polymeric membransin medicines
	7th	Polymeric gels in medicines
	8th	Test
	9th	Stimuli-responsive polymers
	10th	Molecular assemblies with biofunctions.
	11th	Stimuli-responsive polymers and molecular assemblies
	12th	Drug delivery
	13th	Gene therapy
	14th	immunotherapy
	15th	Nanobiomaterials
Evaluation		Evaluation will be based on tests and reports on related topics. Midterm examination 50%, periodic tests 50% (*) * In some circumstances, students who have less than 90% attendance may not be permitted to take the regular and midterm examinations.
Remarks		