

## Common Specialized Subjects of the School of Life Science

Subject Code	Subject	Credit	Content of subject	
10SLS002	Molecular and Cellular Biology II	2	Basic features of molecular and cellular biology will be lectured and discussed. These include regulation of transcription and translation, protein structure and function, post-translational modification, structure and dynamics of chromosome, structure and dynamics of cell, organelles and cytoskeleton, metabolism, protein traffic, signal transduction and cell imaging.	Kazuhiro Maeshima Shigenori Nonaka
10SLS005	Introduction to Bioinformatics	1	This lecture is based on e-learning web system. Lectures include homology and motif search of genomic nucleotide sequences and protein amino acid sequences, construction of databases, large-scale analysis of gene networks and protein-protein interactions. Principles and application of these analyses will be given, and students are requested to practice data analyses.	Yasukazu Nakamura Naruya Saitou Hiroshi Akashi Masanori Arita
10SLS007	Principle and Methodology in Brain Science	1	Basic principles and methodologies essential to understand brain science will be explained.	Atsushi Nanbu
10SLS011	Training Course for Bioinformatics	1	The following objectives are attained through lectures and hands-on tutorials. 1. To understand basic principles in biological sequence analyses and learn the practical skills. 2. To understand the theoretical background of transcriptome and proteome data analysis, and learn the practical skills to analyse these data. 3. To learn current topics and future directions of genomics.	Shuji Shigenobu
10SLS013	Introductory statistics for brain science	1	Basic knowledge regarding statistics for life science is lectured by the statistics specialists.	Junji Nakano Atsushi Nambu
10SLS014	Imaging Science	1	We are now enjoying various imaging techniques in the cutting edge of biological and medical sciences. The well known from old is microscopic techniques and nowadays MRI, PET and MEG are popular imaging tools. Imaging science is a novel discipline trying to integrate the old and the new. It consists of three categories, hardware tools to generate primary data, software tools to digitally process the primary data and imaging analysis to quantitatively analyze imaging digital data. In this lecture, 3D imaging and quantitative image analysis are in a particular focus. The former includes the theoretical background of 3D imaging and its practical applications with electron and light microscopy. The latter includes a novel quantitative image analysis based on various numerical algorithms.	Kazuyoshi Murata Shigenori Nonaka
10SLS021	Introduction to Integrative Bioscience	1	First, the educational program for Integrative Bioscience is introduced. Then, driving forces for rapid development of biology are reviewed from a historical point of view, and the features of contemporary life science are overviewed. Based on these reviews what the Integrative bioscience is and why it is necessary are discussed. Particularly, it is emphasized that a large volume of information on sequences and structures of genome, RNA, proteins, sugars, metabolites etc. and that of spacio-temporal expression of these molecules are integrated to understand their meaning at a cell, tissue, organ or organism level and to unravel the mechanisms of high order biological functions, diseases, environmental responses etc.	Makoto Tominaga
10SLS022	Integrative Bioscience Series	1	To learn biological processes at various levels, covering molecular, cellular and individual processes, with broader perspective in an integrative manner, seven departments (Departments of Structural Molecular Science, Functional Molecular Science, Basic Biology, Physiological Sciences, Genetics, Evolutional Studies of Biosystems, and Statistical Science), which participate in the Integrative Bioscience Education Program, offer a series of 7 lectures in a manner understandable for every student.	Makoto Tominaga

Subject Code	Subject	Credit	Content of subject
90SLS016	Life Science Progress I A	2	Advice on research and presentation will be given by the Progress Committee, which is organized for each student.
90SLS017	Life Science Progress I B	2	
90SLS018	Life Science Progress II A	2	
90SLS019	Life Science Progress II B	2	
90SLS020	Life Science Progress III A	2	
90SLS021	Life Science Progress III B	2	
90SLS022	Life Science Progress IV A	2	
90SLS023	Life Science Progress IV B	2	
90SLS024	Life Science Progress V A	2	
90SLS025	Life Science Progress V B	2	
90SLS026	Life Science Experiments I A	2	
90SLS027	Life Science Experiments I B	2	
90SLS028	Life Science Experiments II A	2	
90SLS029	Life Science Experiments II B	2	
90SLS030	Life Science Experiments III A	2	
90SLS031	Life Science Experiments III B	2	
90SLS032	Life Science Experiments IV A	2	
90SLS033	Life Science Experiments IV B	2	
90SLS034	Life Science Experiments V A	2	
90SLS035	Life Science Experiments V B	2	
90SLS036	Life Science Reading Seminar I A	2	Recent papers in life science will be introduced, explained, and discussed.
90SLS037	Life Science Reading Seminar I B	2	
90SLS038	Life Science Reading Seminar II A	2	
90SLS039	Life Science Reading Seminar II B	2	
90SLS040	Life Science Reading Seminar III A	2	
90SLS041	Life Science Reading Seminar III B	2	
90SLS042	Life Science Reading Seminar IV A	2	
90SLS043	Life Science Reading Seminar IV B	2	
90SLS044	Life Science Reading Seminar V A	2	
90SLS045	Life Science Reading Seminar V B	2	
10SLS016	Life Science Seminar I	1	
10SLS017	Life Science Seminar II	1	
10SLS018	Life Science Seminar III	1	
10SLS019	Life Science Seminar IV	1	
10SLS020	Life Science Seminar V	1	

Subject Code	Subject	Credit	Content of subject
90SLS036	Life Science Reading Seminar I A	2	Recent papers in life science will be introduced, explained, and discussed.
90SLS037	Life Science Reading Seminar I B	2	
90SLS038	Life Science Reading Seminar II A	2	
90SLS039	Life Science Reading Seminar II B	2	
90SLS040	Life Science Reading Seminar III A	2	
90SLS041	Life Science Reading Seminar III B	2	
90SLS042	Life Science Reading Seminar IV A	2	
90SLS043	Life Science Reading Seminar IV B	2	
90SLS044	Life Science Reading Seminar V A	2	
90SLS045	Life Science Reading Seminar V B	2	
10SLS016	Life Science Seminar I	1	Active scientists will give presentations on their own research in life science in seminars and symposiums held within the Department.
10SLS017	Life Science Seminar II	1	
10SLS018	Life Science Seminar III	1	
10SLS019	Life Science Seminar IV	1	
10SLS020	Life Science Seminar V	1	