

## Materials Structure Science

Course Code	Course	Credit	Content of Subject
40COM001**	High Energy Accelerator Science Seminar 1	2	Active fields of accelerator related science, such as elementary particles, nuclear physics, materials science and life science etc., will be presented by front-line researchers.
40COM002**	High Energy Accelerator Science Seminar 2	2	Active fields of accelerator related science, such as elementary particles, nuclear physics, materials science and life science etc., will be presented by front-line researchers.
40MSS001**	Basis and application of synchrotron radiation	1	This course provides an overview of basis and application of synchrotron radiation, such as synchrotron light source, beamline technology, X-ray absorption spectroscopy (XAS), X-ray absorption fine structure (XAFS), magnetic circular dichroism (MCD), X-ray photoelectron spectroscopy (XPS), angle-resolved photoemission spectroscopy (ARPES), X-ray imaging, and scanning transmission X-ray microscope/microscopy (STXM).
40MSS002**	Introduction to Symmetry and Space group	2	The training course aims at providing a solid background in symmetry and group theory using various materials structures. Participants are requested to actively take part in solving the proposed exercises.
40MSS003**	X-ray Absorption Spectroscopy for Materials and Chemistry	2	Lectures on x-ray absorption and x-ray fluorescent spectroscopies (XAFS, XRF) for materials and chemistry.
40MSS004**	Introduction to the Condensed Matter Physics	2	Fundamental concepts for the understanding of condensed matter are presented with an introduction to the microscopic probes including synchrotron radiation, neutron and muon as tools for the study of electronic property.
40MSS005**	Molecular Biology 1	2	Lectures on molecular biology from genes to cells, which is based on modern biology.
40MSS006**	Molecular Biology 2	2	Lectures on molecular biology from genes to cells, which is based on modern biology.
40MSS007**	Introduction to Neutron Science 1	2	Lectures on neutron science for materials, and advanced techniques for neutron production, transportation, detection and instrumentation.
40MSS008**	Introduction to Neutron Science 2	2	Lectures on neutron science for materials, and advanced techniques for neutron production, transportation, detection and instrumentation.
40MSS009**	Dynamic Aspects of Materials Structure	2	Lectures on dynamic aspects of materials structure revealed by utilizing pulsed nature of SR.
40MSS010**	X-ray Imaging Optics	2	Lectures on the principle, the technique and applications of x-ray imaging optics using synchrotron radiation.

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40MSS011**	Synchrotron Radiation Surface Spectroscopy 1	2	Lectures on the principle of surface chemistry using synchrotron radiation and its applications.
40MSS012**	Synchrotron Radiation Surface Spectroscopy 2	2	Lectures on the basics of soft X-ray spectroscopy with a diffraction grating and its application to atomic and electronic structure analyses of surface.
40MSS013**	Introduction to Biology	2	Basic concepts of modern biology including biochemistry, molecular biology and cell biology with particular attention to structural biology.
40MSS014**	Structure Biology 1	2	Lectures on synchrotron X-ray crystallographic analysis of bio-macromolecules.
40MSS015**	Structure Biology 2	2	Lectures on synchrotron X-ray crystallographic analysis of bio-macromolecules.
40MSS016**	Muon-probed condensed matter physics	2	Applications of muon spin rotation, relaxation, resonance to the studies of magnetism and hydrogen-related phenomena is lectured.
40MSS017**	Medical Application of Synchrotron Radiation	2	Lectures on the principle and applications of medical imaging and radiation therapy using synchrotron radiation and the outline concerning medical ethics.
40MSS018**	Soft Condensed Matter Physics	2	Properties of soft condensed matters such as polymers, liquid crystals, colloids, and amphiphilic molecules will be explained from the viewpoint of physics.
80MSS001**	Qualifying Research in High Energy Accelerator Science IIA	2	Students are required to perform a research on an advanced subject in accelerator science.
80MSS002**	Qualifying Research in High Energy Accelerator Science IIB	2	Students are required to perform a research on an advanced subject in accelerator science.
80MSS003**	Special Exercise for Materials Structure Science IA	2	Seminars and laboratory exercise to understand the principle and techniques in Materials Structure Science through extensive use of KEK facilities.
80MSS004**	Special Exercise for Materials Structure Science IB	2	Seminars and laboratory exercise to understand the principle and techniques in Materials Structure Science through extensive use of KEK facilities.
80MSS005**	Special Exercise for Materials Structure Science IIA	2	Seminars and laboratory exercise to understand the principle and techniques in Materials Structure Science through extensive use of KEK facilities.
80MSS006**	Special Exercise for Materials Structure Science IIB	2	Seminars and laboratory exercise to understand the principle and techniques in Materials Structure Science through extensive use of KEK facilities.