

Course Description

Advanced Solid State Physics(MLG003)
Properties of electrons in solids, conductivity and semiconductor properties, magnetic properties and optical properties, such as lectures and systematically applications such as semiconductor, display and mobile technologies
Advanced Semiconductor Materials(MLG004)
Explain the theory and empirical information about the theory and process of manufacturing the semiconductor and display industries theoretical and applied skills needed to not only semiconductor supplier
Advanced Manufacturing Processes of Organic Electroluminescent Device(MLG008)
To understand the details of the process and the overall process using an organic electroluminescent display, and cook for organic electronics materials and technology in this application process. In addition, based on the understanding of these processes, it presents the possibility of a more advanced technology makes it possible to acquire the creative skills.
Advanced Physical Metallurgy(MLG009)
Investigation of physical phenomena occurring in metal materials and teaching recrystallization, histology, mechanical properties, such as the study of the causes for new symptoms.
Advanced High Temperature Metallic Materials(MLG010)
Ti, Ni-based lectures against such methods of new materials for high-temperature intermetallic compound-based manufacturing, improved mechanical properties and practical way back.
X-ray Microstructure Analysis(MLG011)
Examine the microstructure of the material by using the X- diffraction line, crystal structure analysis in the field of research and evaluation, chemical analysis, stress measurement, crystal orientation crystal, phase diagram studies, the measured particle size of the aggregate structure, crystal grain size of the nano-crystals Education plays a relevant and more.
Advanced Functional Metals(MLG012)
Effect of the component elements for understanding the characteristics of the metal material, state also, the mechanical properties, the heat treatment method, use, and learn about such special alloy utilizing this, the second plastic material, shape memory alloy, a damping alloy, a hydrogen storage alloy, superconducting materials production understanding of advanced functional materials, including materials for cryogenic and its techniques, and training for such applications.
Engineering Ceramics(MLG013)

Deals with the oxide, carbide, nitride ceramics such as properties of the engineering, manufacture and application method and the like.
Ceramic Microstructures(MLG014)
Ceramics manufacturing process basis, understanding the influence of the microstructure, the microstructure analysis method on the various physical properties, especially process-microstructure - deals with the correlation of physical properties.
Solid-State Reactions(MLG016)
Diffusion, deals with the content of the various factors, the reactive hot, solid-phase reaction, oxidation, corrosion reaction, sintering, etc. on the reactivity of the gas.
Microstructure Control(MLG017)
The finer the grain of the material and, by controlling the first kind in the second distribution state, etc. cook how to adjust the mechanical properties.
Nano Materials Design(MLG020)
Recent nanotechnology emerged as the next-generation Focus technology is closely linked Materials Science and Engineering. Theory for designing a new nano material such as nano process and understand the nanostructure spectrometry, nano-particles, nano-composites, nano-metal, nano-ceramics, nano-semiconductor that is used to develop a material having a structure of nanometer size Learn the background and so on.
Advanced Thin Film Engineering(MLG021)
Students learn the basic properties and the properties of the material of the vacuum thin-film which is widely used in the field of electronic materials, a thin film process method, a method such as characteristics of the thin film.
Advanced Semiconductor Processing(MLG022)
Students learn the process method of a semiconductor device, such as the basic nature of the semiconductor material and photo etching, ion implant, diffusion, oxide semiconductor, ohmic contact.
Advanced Semiconductor Devices(MLG023)
Microwave Diodes, Quantum-Effect Devices, MESFET, MOSFET Devices, Bipolar Transistor, etc. covers the basic theory of the basic operating principles and related material of semiconductor devices systematically device basic Bipolar and FET of the semiconductor device using the Design and Simulation Tool the default behavior of the Transistor and systematic understanding through the practice.
Advanced Electrochemical Process(MLG025)

Intensive courses as learning information, electrochemical equilibrium and non-equilibrium electrochemistry, interfacial phenomena, simulation and analysis of applications, the electrochemical process of electrochemical techniques and the new electrochemical technologies and applications for the application of electrochemical fundamentals and electrochemical techniques It is the story.

Advanced Materials for Energy Devices(MLG027)

To determine the possibility of the state of the art of hydrogen energy as a next-generation energy, role, electrical, and chemical properties of the basic principles and the material of the fuel cell as an energy conversion device based on the hydrogen energy, Research and Development of the respective materials, the problem and a lecture on ways to overcome

Advanced Carbon Materials(MLG030)

Carbon materials used in various fields such as composites, electronic materials, display and functional materials. Contents are composed of structures, manufacturing process, applications and discuss future of the carbon materials.

Optoelectronic Materials(MLG031)

This lecture Physics of compound semiconductors for applications such as light emitting devices, electronic devices and solar cells using compound semiconductors - aims to foster graduate-level professional knowledge about the chemical properties and device applications.

Nano Electronic Science and Engineering(MLG032)

This course aims to cultivate professional knowledge of the graduate level for the manufacturing, property evaluation and device applications of low-dimensional nanostructures such as nanotubes, nanowires, quantum dots, quantum wells.

Display Engineering(MLG033)

Recently understand the physical meaning of the various terms that are of interest are used for the display characteristics of the display industry is increasing. As well as the structure and principle of the CRT have been weeks to understand the present driving method, the manufacturing process of various flat panel display (TFT-LCD, OLED, PDP, FED) and looks at the current market volume. Also look at the principles and the possibility of flexible displays, e- ink, an inorganic EL display, etc., known as the future.

Seminar in Information Materials(MLG035)

Studies around the contents of the presentation and discussion of recent research findings and trends related to information material.

Seminar in Nano Materials(MLG036)

Studies around the contents of the presentation and discussion of recent trends and research findings related to nanomaterials

Alternative energy engineering(MLG037)

Using solar power, solar power, bio, wind, hydro, ocean, waste, geothermal, etc. and education about alternative energy technology to the development of carbon dioxide.

Advanced Bio-materials(MLG042)

Lectures on biochemical characteristics and application of mechanical and thermal properties, the physical and functional characteristics and production, including of synthetic biodegradable technology and materials of biological materials.

Biomaterials Chemistry(MLG043)

And organic chemistry understands the chemical reaction for the characterization of the biological material with a biocompatible.

Special Topics on Secondary battery(MLG044)

The principle of the secondary battery, components, and with the introduction of the latest technologies for the overall system, understood and Student in depth for the secondary battery materials through the latest technical description for the main component used in the cathode, anode and the electrolyte of the secondary battery and discuss and review articles provide an opportunity to find a breakthrough and the limits of existing technology.

Ceramic Process(MLG045)

Deals with the ceramic powder and the production process overview prepared and characterized, spray-drying, molding, machining, such as the theories and applications of each manufacturing process, such as densification and machining.

Electrochemical Methods and Applications(MLG046)

In particular of the chemical changes and widespread application to be applied based on the basis of information about the electric energy by a chemical reaction due to the current electronic devices and energy conversion element areas (solar hydrogen fuel cells, solar CO₂ fuel cells, solar cells, sensors, batteries, fuel cells, a subject that is conducted to focus on the application of electrochemical methods to be applied to the displays).

Dielectrics and Applications(MLG047)

A base that is in progress and subject to focus on the application of various radio communication equipment and a dielectric material that is applied to high-tech electronic devices (Dielectrics, Ferroelectrics, Piezoelectrics, Pyroelectrics etc.).

Advanced Photonic Materials(MLG048)

Based on the primary purpose of electromagnetism overall understanding and use of the Maxwell equations and the optical reflection of light refraction, diffraction and interference, propagation of light in the material, the lecture on the thin film optical, electro-optical and non-linear optics.

Advanced Nanodevices(MLG049)

It establishes the concept of nano-science and nanotechnology based on the basics of quantum mechanics and solid state physics. In particular, learning the principles and applications of the state of the art, such as single-electron transistors, nano-semiconductor devices, molecular electronic devices, the carbon nanotube device, a spin transistor and nano biosensor for nanodevices.

Materials with Photon Conversion Property(MLG050)

Light originating from the sun acts as a source of energy in various districts including wind and precipitation. In this course, it introduces the latest technology for this kind of sun light a light conversion material capable of directly switching to another source of energy and transform the optical principle, and the optical conversion system.

Advanced New Materials Engineering(MLG051)

Deals with the basic theory of metal, ceramic, polymeric material and cook the physical, chemical, mechanical and electrical properties, improved methods.

Advanced Materials Science and Engineering(MLG052)

Metal related, from construction materials to study for advanced metal functional materials with respect to the principles and applications of the manufacturing, processing and analysis of assessment.

Advanced Ceramic Materials(MLG053)

Understanding the structure and characteristics between the physical properties of amorphous inorganic materials and study about the manufacturing problems and functional characteristics of the glass.

Advanced Ceramic Materials(MLG054)

Structural studies of ceramics, defects, mass transfer, phase balance and microstructural characteristics of the effects on the properties.

Functional Ceramic Materials(MLG055)

Electrical functions depending on the nature and features a ceramic material which, magnetic features and optical features, chemical features, thermal features, mechanical features, learn about the nuclear-related features various high temperature, structural, electronic and magnetic materials and bio-from traditional ceramic sector, studies about such technology.

Advanced Physical Properties of Polymer(MLG056)

Study of the structure and thermodynamic properties of the polymer material, a plastic nonhameyo manufacture, processing, properties, use of polymer materials focused, Lectures the properties, manufacturing, industrial use of rubber, fiber, adhesives.

Advanced Physical Properties of Polymer(MLG058)

Lectures about the thermal properties of the polymer dynamics and thermodynamic properties, crystalline, fracture mechanics analysis.

Advanced Electronic Materials(MLG059)

Deals with the theory, the nature and use, ferroelectric materials, magnetic materials, conductor, semiconductor, insulating electronic materials.

Advanced Energy Materials(MLG060)

To determine the possibility of the state of the art of hydrogen energy as energy generation, Research and Development of roles, electrical, chemical properties, each of the material of the basic principles and the material of the fuel cell as an energy conversion device based on the hydrogen energy, lectures about the problem and ways to overcome.

Electronic Ceramic Materials(MLG062)

Understands basis properties of matter and interrelationship about atomic structure/electronic structure/furtherance of electron ceramics including insulation ceramics, dielectric ceramics, magnetic ceramics, piezoelectric ceramics, semiconducting ceramics and ceramic sensor and handles its application.

Advanced Nanofabrication Techniques(MLG063)

This course explores unconventional bottom-up and top-down approaches for manufacturing functional nanostructured materials

Advanced Lithography(MLG064)

This course focuses on photolithography, a key technology in semiconductor processing. We will discuss optical principles of photolithography, photoresist systems, and next-generation lithography techniques and applications.

Special Issues on Mechanical Behavior of Materials(MLG065)

This course explores new issues and techniques in mechanical behavior (i.e., deformation, fracture, fatigue, creep and so on) of materials. Topics covered include recent researches on mechanical behaviors of metals and ceramics. The related theories on elasticity, dislocation, plasticity, and defects are closely reviewed as well.

Advanced Carbon Science and Technology(MLG066)

Understanding basic properties according to various structures of carbon materials that obtained from coal, petroleum and biomass. It provides process technologies to improve physical and chemical properties for products.

Advanced Materials Engineering for 4th Industrial Revolution(MLG067)

This course is designed to provide a systematic discussion on the principles of operation of Sensing Technologies for electronic, physical and chemical signals of various electronic components interlocked with the 4th industry and the basic theory of process / new materials. I understand it in depth through.

Seminar in Advanced Materials Properties(MLG068)

Understanding the importance of material properties and development for material in modern industry, and learn about basis theory, principle and application of advanced materials through seminar of experts.
Seminar in Advanced Materials Processing(MLG069)
Understanding the importance of processing and development for material in modern industry, and learn about basis theory, manufacturing process and application of advanced materials through seminar of experts.
Advanced Phase Transformation of Materials(MLG070)
Understand the theoretical background of the phase change phenomena in the production of nanomaterials and experimental processes and foster the ability to establish a phenomenon that occurs during each process improvement skills needed to improve the application of materials industry
Advanced Electron Microscopy(MLG071)
The principle of learning the basic structure of the electron microscope image formation, analysis of the diffraction pattern, the boil method, such as analysis of the crystal structure.
Study for Master's Thesis(MLG901)
It leads the Master's thesis research direction and content.
Study for Doctor's Thesis1(MLG911)
It leads the doctoral thesis research direction and content
Study for Doctor's Thesis2(MLG912)
It leads the doctoral thesis research direction and content