

Department of Electrical and Electronic Information Engineering

Introduction

The Electrical and Electronic Engineering courses, which dealt with the education and training mainly on electrical energies, IC devices, and their fundamentals and basic materials, have been reorganized to the Electrical and Electronic Information Engineering courses by expanding the original fields so as to involve the electronic materials and information communication systems. The aim of the graduate and under graduate courses of the Electrical and Electronic Information Engineering is to educate and train students to yield engineers and researchers of the next generation for their advanced core fields of electronic materials, electrical engineering, integrated electronics and information communication technology.

Courses

Electronic Materials Course:

Information electronics supporting our good life of the modern society is a key industry area of the 21st century. This Electronic Materials Course trains and develops the students through providing the wide fundamental knowledge and technologies of substances, materials, processing, and instrumentation, which are the base of the electrical and electronic information engineering. The certificated students can take active and important roles as practically-minded and creative research-based engineers in the various industrial areas including electrical and electronic industries, chemical and material industries, information network area, home information appliances, vehicles, robotics, and medical welfare.

Electrical Systems Course:

Based on understanding the importance of electrical energy for sustainable evolving society, the students learn the fundamental knowledge and technologies of generation, transportation, control, storages, measurements, and applications of electrical energy. The students trained in this course will take an important role as engineers and researchers in the various industrial fields including environment and energy, electrical and electronics, traffic and communications, materials and nanotechnology, machine and mechatronics, biology, medical care, primary and tertiary industries.

Integrated Electronics Course:

The campus 'LSI factory', which provides a great opportunity to fabricate in-house integrated-circuit based devices, helps you acquire fundamental knowledge and techniques on the semiconductor devices, CMOS, MEMS, analog circuits, optoelectronics, micro- and nano-scale sensors, and their interdisciplinary applications. Through the course program, our students become highly-skilled engineers and researchers who are acknowledged for their contributions to a wide range of fields including semiconductor industry, information technology, robot, bio, and medical research.

Information and Communication System Course:

The Information and Communication Technologies (ICT) has progressed from telephone network to the Internet generation, and will be going toward ubiquitous network world. The user access scheme also changes from fixed to mobile, and cable to wireless LANs. The ICT is an important trunk of industries supporting our 21st-century society, and playing more and more significant roles. In this course, students learn wide and deep science and technologies from hardware layer such as functional integrated circuits, sensors, and smart antennas, up to communication system, networks, and applications. Students are expected to contribute to industries in a variety of fields for communications, broadcasting, electric devices, system developments, medical welfare, transportation, ecology, energy, cargos, finance, insurance, or other related businesses after graduation.

Admission Policy

The Graduate Program in Electrical and Electronic Information Engineering focuses on producing practically-minded and creative research-based engineers with skills to meet the challenges of our modern, technologically-based society. The Program emphasizes the importance of: a deep understanding of the physical properties of strategically important materials forming the backbone of electrical, electronic and information industries; knowledge of the processes and procedures employed for fabricating functional devices; and a first-hand understanding of the operating principles of integrated circuits, discrete electronic devices, energy systems, information and communication technology and networks. This course seeks and welcomes applicants fulfilling the following criteria:

- Students wishing to follow careers as globally minded engineers with cutting-edge technological skills in electrical and electronic materials, electric systems, integrated electron systems, and information and communication systems.
- Academically orientated students with a strong desire to resolve challenging issues in electrical and electronic engineering, and information engineering.
- Students with solid backgrounds in the natural sciences wishing to apply their expertise for a systematic approach towards the creation of new technology.
- Highly motivated students with a strong desire to acquire globally applicable communication skills based on technical English and Japanese.

Electronic Materials Course

Position	Name	Field	Research Interests
Professor	Dr. Eng. Mitsuo Fukuda (Mr) fukuda@ee.tut.ac.jp	Photonics	(1) Nano-scale Photonic Devices (2) Research on Sensing and Measurement by using Lightwave
Professor	Dr. Eng. Mitsuteru Inoue (Mr) inoue@ee.tut.ac.jp	Magnetics	(1) Nano-scale Magnetic Structures (2) Micro-magnetic Devices
Professor	Dr. Eng. Atsunori Matsuda (Mr) matsuda@ee.tut.ac.jp	Applied Materials Chemistry	(1) Advanced Amorphous Materials (2) Inorganic-Organic Hybrid Materials
Associate Professor	Dr. Sci. Toshiaki Hattori (Mr) thattori@ee.tut.ac.jp	Analytical Chemistry	(1) Electroanalytical Chemistry (2) Characterization of Polyelectrolyte
Associate Professor	Dr. Eng. Kazuo Hattori (Mr) hattori@ee.tut.ac.jp	Electrical and Electronic Materials Engineering	(1) Development of effective methods to form good films of various materials (2) Development of clustering methods
Associate Professor	Dr. Eng. Yuichi Nakamura (Mr) nakamura@ee.tut.ac.jp	Electric Materials Processing	(1) Thermoelectric Materials and Systems (2) Functional materials and processing
Associate Professor	Dr. Eng. Hiroyuki Muto (Mr) muto@ee.tut.ac.jp	Inorganic Materials Structural Ceramics	(1) Development of nano structure controlled functional ceramics (2) Deformation mechanisms and processes of structural ceramics
Associate Professor	Dr. Eng. Takeshi Ishiyama (Mr) ishiyama@ee.tut.ac.jp	Optical and Electronic Materials Engineering	(1) Si Nano-Material (2) Light-Emitting ZnO Nanocrystal
Associate Professor	Dr. Eng. LIM PANG BOEY (Ms) may2lim@las.tut.ac.jp;	Optical, Optical Memory and Application	(1) Hologram Memory (2) Evaluation of Hologram Material (3) Collinear Holography
Lecturer	Dr. Eng. Hiroyuki Takagi (Mr) takagi@ee.tut.ac.jp	Electronics Magnetics	(1) Nano-scale Magnetic Structures (2) Micro-magnetic Devices

Electrical Systems Course

Position	Name	Field	Research Interests
Professor	Dr. Eng. Masayuki Nagao (Mr) nagao@tut.jp	High Field Electrical Insulation	(1) High-Field Electric Properties of Polymeric Insulation Materials (2) Cryogenic Electrical Insulation for Superconducting Power Apparatuses
Professor	Dr. Eng. Yoji Sakurai (Mr) sakurai@ee.tut.ac.jp	Electrochemical Energy Devices	(1) Next-Generation Lithium-Ion Batteries (2) Post Lithium-Ion Batteries
Professor	Dr. Eng. Hirofumi Takikawa takikawa@ee.tut.ac.jp	Plasma Technology and Application Engineering	(1) Nanoscale Material Synthesis by Thermal and Cold Plasmas (2) Development of Advanced Plasma System and Plasma Applications
Professor	Dr. Eng. Naohiro Hozumi (Mr) hozumi@icceed.tut.ac.jp	Measurement Techniques Dielectrics and Electrical Insulation Ultrasonics	(1) Ultrasonic micro-imaging techniques for medical and biological applications (2) Diagnosis and precise measurement for high voltage insulation systems
Associate Professor	Dr. Eng. Ryoji Inada (Mr) inada@ee.tut.ac.jp	Electrochemical Energy Devices	(1) Development of All-Solid-State Lithium-Ion Batteries (2) Non-Destructive Magnetic Testing Method for Battery Safety
Associate Professor	Dr. Eng. Yoshiyuki Suda (Mr) suda@ee.tut.ac.jp	Plasma Materials Engineering	(1) Carbon nanomaterials (2) Energy devices
Associate Professor	Dr. Eng. Yoshinobu Murakami (Mr) murakami@ee.tut.ac.jp	High Voltage Engineering	(1) Measurement on Dielectrics and Electrical Insulation (2) Development of functional insulating materials

Integrated Electronics Course

Position	Name	Field	Research Interests
Professor	Dr. Eng. Makoto Ishida (Mr) ishida@ee.tut.ac.jp	Semiconductor Physics and Device	(1) Smart sensors and integrated circuits (2) Micro/nano structures and applications to new devices
Professor	Dr. Eng. Akihiro Wakahara (Mr) wakahara@ee.tut.ac.jp	Crystal Growth Optoelectronics	(1) Heteroepitaxy and applications to optoelectronics (2) Optoelectronic integrated devices/system on Si-based ICs and MEMS
Professor	Dr. Eng. Kazuaki Sawada (Mr) sawada@ee.tut.ac.jp	Semiconductor Devices	(1) Bio-sensing devices (2) Smart CMOS/CCD image sensors
Professor	Dr. Sci. Adarsh Sandhu (Mr) sandhu@eiiris.tut.ac.jp	Interdisciplinary research on nano-bio-magnetics	(1) Growth and applications of graphene membranes (2) Wet-real time, scanning electron microscopy of materials in solutions (3) Magnetic nanoparticle-labels for medical diagnostics (4) AlGaIn/GaN Hall effect magnetic sensors for scanning hall probe microscopy (SHPM) and applications in extreme environments
Associate Professor	Dr. Eng. Hiroshi Okada (Mr) okada@ee.tut.ac.jp	Semiconductor Devices	(1) Compound semiconductor based electronic devices and integrated systems (2) Nano materials and fabrication processes for electronic devices

Position	Name	Field	Research Interests
Associate Professor	Dr. Eng. Yuji Murakami (Mr) ymurakami@ee.tut.ac.jp	Biosensor	(1) Microbiosensor for mobile/personal healthcare (2) Microfluidic biodevices
Associate Professor	Dr. Eng. Takeshi Kawano (Mr) kawano@ee.tut.ac.jp	Micro/Nano Devices, Neural Interface Devices	(1) Neural interface devices (2) Nanoscale neuroprobes (3) Integration of Micro/Nano devices
Lecturer	Dr. Eng. Hiroto Sekiguchi (Mr) sekiguchi@ee.tut.ac.jp	Crystal Growth Optical Devices	(1) Heteroepitaxial Nitride-based Devices (2) Semiconductor nanostructure for optical devices
Lecturer	Dr. Eng. Kazuhiro Takahashi (Mr) takahashi@ee.tut.ac.jp	Micro/Nano Electro Mechanical Systems	(1) BioMEMS sensor (2) MEMS-based optical devices

Information and Communication System Course

Position	Name	Field	Research Interests
Professor	Dr. Eng. Takashi Ohira (Mr) ohira@tut.jp	Wave Engineering	(1) Microwave Circuits (2) Smart Antennas (3) Radio Signal Processing (4) Wireless Power Transfer
Professor	Dr. Sci. Shuichi Ichikawa (Mr) ichikawa@tut.jp	Computer Science Computer Architecture Parallel Processing	(1) Custom computing circuit & special-purpose computer architecture (2) High Performance Computing (3) Parallel Computer Architecture and Parallel Processing (4) System Security and Information Security
Professor	Dr. Eng. Hideyuki Uehara (Mr) uehara@tut.jp	Communication Engineering	(1) Wireless Access Protocol (2) Ad hoc and Sensor Networks

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