

Department of Electrical and Electronic Information Engineering

Introduction

The Department of Electrical and Electronic Information Engineering is comprised of four courses: Electronic materials, Electrical systems, Integrated electronics, and Information and 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 advanced core fields of electronic materials, electrical engineering, integrated electronics, and information communication technology.

Courses

Electronic Materials Course

This Electronic Materials Course trains and develops students by providing broad fundamental knowledge and technologies of substances, materials, processing, and instrumentation, which are the foundations of electrical and electronic information engineering. Certificated students can perform active and important roles as practically-minded and creative research-based engineers in the various industrial areas including the electrical and electronic industries, chemical and material industries, the information network area, home information appliances, vehicles, robotics, and medical welfare.

Electrical Systems Course

Students learn fundamental knowledge and technologies of generation, transportation, control, storages, measurements, and applications of electrical energy, based on understanding the importance of electrical energy for a sustainable evolving society. Students trained in this course will perform important roles 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 students acquire fundamental knowledge and techniques on 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 the semiconductor industry, information technology, robot, bio, and medical research.

Information and Communication System Course

The Information and Communication Technologies (ICT) is the backbone of industries that supports our 21st-century society and is continuing to play more significant roles. In this course, students learn broad and profound science and technologies, from hardware layers such as functional integrated circuits, sensors, and smart antennas, up to communication system, networks, and applications. Students are expected to contribute to industries of a variety of fields such as communications, broadcasting, electric devices, system development, medical welfare, transportation, ecology, energy, cargo, 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.

Laboratory list

● Electronic Materials

Name	Position	Field	Research Interests
Mitsuo Fukuda Dr. Eng. fukuda@ee.tut.ac.jp	Professor	Photonics	(1) Nano-scale Photonic Devices (2) Research on Sensing and Measurement by using Lightwave
Atsunori Matsuda Dr. Eng. matsuda@ee.tut.ac.jp	Professor	Applied Materials Science	(1) Advanced Amorphous Materials (2) Inorganic-Organic Hybrid Materials (3) All-Solid-State New Batteries
Hironaga Uchida Dr. Eng.	Professor	Magnetics	(1) Nano-scale Magnetic Structures (2) Development of measurement methods
Hiroyuki Muto Dr. Eng. muto@ee.tut.ac.jp	Professor	Inorganic Materials Structural Ceramics	(1) Development of nano structure controlled functional ceramics (2) Deformation mechanisms and processes of structural ceramics
Toshiaki Hattori Dr. Sci. thattori@ee.tut.ac.jp	Associate Professor	Analytical Chemistry	(1) Electroanalytical Chemistry (2) Characterization of Polyelectrolyte
Yuichi Nakamura Dr. Eng. nakamura@ee.tut.ac.jp	Associate Professor	Electric Materials Processing	(1) Thermoelectric Materials and Systems (2) Functional materials and processing
Takeshi Ishiyama Dr. Eng. ishiyama@ee.tut.ac.jp	Associate Professor	Optical and Electronic Materials Engineering	(1) Semiconductor nanostructures (2) Optoelectronic devices
Hiroyuki Takagi Dr. Eng. takagi@ee.tut.ac.jp	Associate Professor	Electronics Magnetics	(1) Nano-scale Magnetic Structures (2) Micro-magnetic Devices
LIM PANG BOEY Dr. Eng. may2lim@las.tut.ac.jp	Associate Professor	Optical, Optical Memory and Application	(1) Hologram Memory (2) Evaluation of Hologram Material (3) Collinear Holography

● Information and Communication System

Name	Position	Field	Research Interests
Takashi Ohira Dr. Eng. ohira@tut.jp	Professor	Wave Engineering	(1) Microwave Circuits (2) Wireless Power Transfer
Shuichi Ichikawa Dr. Sci. ichikawa@tut.jp	Professor	Computer Science, Computer Architecture, Parallel Processing	(1) Custom computing & special-purpose computer architecture (2) System Security and Information Security (3) Parallel Processing and High Performance Computing
Hideyuki Uehara Dr. Eng. uehara@tut.jp	Professor	Communication Engineering	(1) Wireless Access Protocols (2) Ad hoc and Sensor Networks
Masaya Tamura Dr. Informatics tamura@tut.jp	Associate Professor	Microwave Engineering	(1) Microwave Filter (2) Wireless Power Transfer under Water
Keigo Takeuchi Dr. Informatics takeuchi@ee.tut.ac.jp	Associate Professor	Information and Communication Engineering	(1) Wireless Communications (2) Multi-Antenna Systems (3) Space-Time Signal Processing

● Electrical Systems

Name	Position	Field	Research Interests
Masayuki Nagao Dr. Eng. nagao@tut.jp	Professor	High Field Electrical Insulation	(1) High-Field Electric Properties of Polymeric Insulation Materials (2) Cryogenic Electrical Insulation for Superconducting Power Apparatuses
Yoji Sakurai Dr. Eng. sakurai@ee.tut.ac.jp	Professor	Electrochemical Energy Devices	(1) Next-Generation Lithium-Ion Batteries (2) Post Lithium-Ion Batteries
Hirofumi Takikawa Dr. Eng. takikawa@ee.tut.ac.jp	Professor	Plasma Technology and Application Engineering	(1) Plasma system and Applications (2) Surface and nanofilms (3) Renewable energy and related technology
Naohiro Hozumi Dr. Eng. hozumi@icceed.tut.ac.jp	Professor	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
Yoshiyuki Suda Dr. Eng. suda@ee.tut.ac.jp	Associate Professor	Plasma Materials Engineering	(1) Carbon nanomaterials (2) Energy devices
Yoshinobu Murakami Dr. Eng. murakami@ee.tut.ac.jp	Associate Professor	High Voltage Engineering	(1) Measurement on Dielectrics and Electrical Insulation (2) Development of functional insulating materials
Ryoji Inada Dr. Eng. inada@ee.tut.ac.jp	Associate Professor	Electrochemical Energy Devices	(1) Development of All-Solid-State Lithium-Ion Batteries (2) Non-Destructive Magnetic Testing Method for Battery Safety

● Integrated Electronics

Name	Position	Field	Research Interests
Akihiro Wakahara Dr. Eng. wakahara@ee.tut.ac.jp	Professor	Crystal Growth Optoelectronics	(1) Heteroepitaxy and its applications to optoelectronics (2) Optoelectronic integrated devices/system on Si-based ICs and MEMS
Kazuaki Sawada Dr. Eng. sawada@ee.tut.ac.jp	Professor	Semiconductor Devices	(1) Bio-sensing devices (2) Smart CMOS/CCD image sensors
Yuji Murakami Dr. Eng. ymurakami@ee.tut.ac.jp	Associate Professor	Biosensor	(1) Microbiosensor for mobile/personal healthcare (2) Microfluidic biodevices
Takeshi Kawano Dr. Eng. kawano@ee.tut.ac.jp	Associate Professor	Micro/Nano Devices, Neural Interface Devices	(1) Neural interface devices (2) Nanoscale neuroprobes (3) Integration of Micro/Nano devices
Hiroto Sekiguchi Dr. Eng. sekiguchi@ee.tut.ac.jp	Associate Professor	Crystal Growth Optical Devices	(1) Heteroepitaxial Nitride-based Devices (2) Semiconductor nanostructure for optical devices
Hiroshi Okada Dr. Eng. okada@ee.tut.ac.jp	Associate Professor	Semiconductor Devices	(1) Compound semiconductor based electronic devices and integrated systems (2) Nano materials and fabrication processes for electronic devices
Kazuhiro Takahashi Dr. Eng. takahashi@ee.tut.ac.jp	Lecturer	Micro/Nano Electro Mechanical Systems	(1) BioMEMS sensor (2) MEMS-based optical devices

as of January 2016