Graduate School of Science and Technology, Shizuoka University

― Creating the Future
Reorganizing the former two graduate schools in Shizuoka University, the Graduate School of Science and Technology started in April 2006. It is a unique doctor course graduate school, where faculties in wide varieties of the fields including engineering, informatics, science, and agriculture, and some in the education and social science areas participate in interdisciplinary researches and education. We accept students widely from various counties in the world including working students. Since establishment, students more than the admission capacity of 50 have entered the school each year with ambition and strong willingness for challenge, and 336 students have been awarded a doctoral degree.

The educational objective is to give students deep knowledge dedicated to specialized fields and broad-based education that meets the needs of the times. We provide the curriculum which consists of systematically organized special subjects and those related to daily progress in surrounding fields and social needs as well as the detailed guidance system prepared in each department in order to nurture individuals who possess creativity, self-problem-solving ability and communication skills. In addition, to nurture internationally active engineers and researchers holding doctoral degrees, we extensively promote cooperative education and exchange programs of students with collaborating universities and research institutes on the basis of exchange agreements. The leading projects presently conducted are: International Priority Graduate Programs for Students Granted by Japanese Government Scholarship, Inter-Academia that is an international conference with 13 collaborating Central-Eastern European universities, the Double Degree Program in the doctor’s course, which we first introduced in Japan, and Environmental Leaders Program (special doctoral program).

In addition to the basic and applied research in engineering, informatics, science, and agriculture, our research aims at creating cross-cutting and advanced interdisciplinary fields beyond the conventional framework and creating innovation based on the industries in the local area; we pursue original and advanced researches in optics, electronics, and informatics mainly on Hamamatsu campus and those in life and environmental sciences manly on Shizuoka campus. Especially in the fields of “optoelectronic and imaging science,” “environment and energy system,” and “green-bio-science,” which Shizuoka University strategically promotes, we educate the students under strong cooperation with Research Institute of Electronics and Research Institute of Green Science and Technology in our university.

We celebrated the 10th anniversary in March this year since establishment and have launched into another decade. Taking over the achievement accumulated until today, we will continue to train engineers and researchers to meet the expectation of international and local societies while further improving educational programs and strengthening the support for students. We will also transmit more understandable and appealing information toward industry, overseas countries and society.

July, 2016
Hamamatsu Campus focuses on the fields of optoelectronic engineering and informatics, while Shizuoka Campus specializes in environmental science and bioscience. To ensure that the graduate school can flexibly adapt to changes that occur over time, the Education Division and the Research Division are independent of each other.

**Activities**

**InterAcademia**
Shizuoka University and collaborating Central-Eastern European universities are involved in the active exchange of research, students and doctoral courses to improve academic progress and achievement in engineering. We call the international conference InterAcademia that has taken place every year since 2002. IA activities are typically carried out by the faculty of Shizuoka University and its sister universities, but IA welcomes a wide range of participants from other research institutions and industries to promote the exchange of knowledge by providing a forum for exchanging novel research results and opinions.

**Double Degree Special Program (DDP)**
In 2006, DDP was initiated in Shizuoka University and Warsaw University of Technology. DDP is the program which enables the student to obtain two kinds of doctoral degrees which are conferred by Shizuoka University and home university. DDP student enrolls in the both universities simultaneously and receive education and research guidance by supervisors in both universities. Supervisors discuss the educational and research plan closely and give academic advice to DDP student. DDP student will stay at each university in turn according to the research and education plan. The total enrollment period of doctoral degree course is about four years or longer depending on each circumstance. In this way DDP student will have a new home university (Shizuoka Univ. in Japan) as well as his home university in his home country. It helps him/her to have valuable international experience and more chances of employment.

**Central/Eastern Europe and Asia International Education Partnership Programme**
"MEXT The International Priority Graduate Programs (PGP) 2012 - Advanced Graduate Courses for International Students-" was adopted.
Department of Nanovision Technology

- Nano device and system in image engineering
- Photon and electron physics in nanoregion and its device applications
- Optical properties of polymers and dielectric materials in nanoregion
- Optoelectronics

**Research Area**
Visual Information Engineering

**Research Detail**
Developments of video-based pupil detection technique and of pupil detection-based methodology and implementation (e.g., eye-gaze and head pose detection, and drowsiness detection) for human interaction and monitoring are done for the improvement of welfare medical treatment and safe driving.

**Research Area**
Imaging technology of X-ray, gamma-ray and neutron.

**Research Detail**
We research and develop the imaging devices, systems and its application for invisible light especially X-ray, gamma-ray and neutron from the base to practical use.

**Research Area**
Semiconductor Engineering

**Research Detail**
Through the use of nanodevices, such as single-electron transistors, we are researching low-power high-density circuit/system architectures. Since the nanodevices can be highly sensitive sensors, we are trying to apply them to single-photon detection, etc.

**Research Area**
Semiconductor nanodevices

**Research Detail**
We are developing the technologies for manipulating single charges, spins, and phonons in silicon.

**Research Area**
Laser microscopy, three-dimensional imaging theory

**Research Detail**
We have developed high resolution optical microscopy and its applications to optical data storage. Nano-fabrication techniques has been developed with femto-second laser pulse.

**Research Area**
Imaging Semiconductor Devices and Systems

**Research Detail**
We are investigating imaging semiconductor (CMOS) devices with advanced performance and functions for scientific, industrial and biomedical applications.
<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Research Area</th>
<th>Research Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Masaaki Nagatsu</td>
<td>Professor</td>
<td>Plasma Science, Plasma Application</td>
<td>We have been carrying out research on the development of various plasma processes based upon plasma science and their application to nanotechnology and bio-medical fields.</td>
</tr>
<tr>
<td>Gen Hashiguchi</td>
<td>Professor</td>
<td>Micromachining, Sensor</td>
<td>We have focused on MEMS design theory and its application for development of integrated MEMS with semiconductor devices.</td>
</tr>
<tr>
<td>Norihisa Hiromoto</td>
<td>Professor</td>
<td>Terahertz technology, Terahertz sensor, Infrared technology, Light scattering detection</td>
<td>Research on terahertz (THz) sensor and THz time-domain spectrometer to develop THz-wave application, and airborne particle detection by light scattering to protect atmospheric environment against pollution.</td>
</tr>
<tr>
<td>Masayuki Nakamoto</td>
<td>Professor</td>
<td>Vacuum Nanoscience, MEMS, Display, Advanced Materials</td>
<td>We have been doing research on Super Reality 3D FED/MEMS Displays, Vacuum Nano/MEMS Devices for Aerospace, Atomic Power and Harsh Environments, Vacuum Nano Power Devices, Advanced Materials for MEMS and Sensors.</td>
</tr>
<tr>
<td>Vygantas Mizeikis</td>
<td>Professor</td>
<td>Applied optics, laser fabrication, micro-/nano-photonics</td>
<td>Laser fabrication and characterization of photonic micro-/nano-structures, modification of materials by femtosecond laser pulses.</td>
</tr>
<tr>
<td>Hidetoshi Sekine</td>
<td>Professor</td>
<td>Vacuum Nano/Infrared electronics</td>
<td>We are investigating new-functional and high-efficient devices using Si nanostructures and recently focusing on thermolectric devices.</td>
</tr>
<tr>
<td>Hidenori Mimura</td>
<td>Professor</td>
<td>Vacuum Nanoelectronics</td>
<td>Basic research for nanovision imaging devices such as an ultra fine field emission display and an ultra fine CdTe X-ray image sensor.</td>
</tr>
<tr>
<td>Kazuhiko Hara</td>
<td>Professor</td>
<td>Semiconductor engineering, Solid-state physics</td>
<td>We have been developing unique light-emitting materials based on the semiconductor nanotechnology aiming at their application for novel light sources and displays.</td>
</tr>
<tr>
<td>Hidetoshi Sekine</td>
<td>Professor</td>
<td>Terahertz technology, Terahertz sensor, Infrared technology, Light scattering detection</td>
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Department of Nanovision Technology

Wataru Inami  
Associate Professor  
Hamamatsu

Research Area
Optical Measurement Science, Advanced Microscopy

Research Detail
Developing principles for new measurement and imaging technologies which show us things we have not seen before.

Akihisa Ogino  
Associate Professor  
Hamamatsu

Research Area
Plasma Science, Plasma Application

Research Detail
We have been researching plasma processing that aims at modifying the physical and chemical properties of a surface and also fabricating nanomaterials.

Keiichiro Kagawa  
Associate Professor  
Hamamatsu

Research Area
CMOS image sensors, information photonics

Research Detail
Biomedical CMOS image sensors and computational imaging based on multi-aperture optics and advanced CMOS image sensors for ultra-fast or ultra-high-sensitivity imaging.

Minoru Watanabe  
Associate Professor  
Hamamatsu

Research Area
Optical information processing, Very-large-scale integrated circuit(VLSI), Space embedded system, Optoelectronic device, Reconfigurable device

Research Detail
Development of Optoelectronic devices including optical information processing technologies and very-large-scale integrated circuits(VLSIs).

Yoku Inoue  
Associate Professor  
Hamamatsu

Research Area
Semiconductor engineering, Crystal growth, Nanomaterial engineering

Research Detail
We are working on broad CNT researches including growth, fabrication of CNT constructions (fibers), CNT composites and CNT electronics.

Atsushi Ono  
Associate Professor  
Hamamatsu

Research Area
Near-field Optics, Plasmonics

Research Detail
We design and fabricate metallic nanostructures for the efficient surface plasmon excitation. It is applied for the development of super-resolution imaging device and high-sensitive photodetectors.

Yoichiro Neo  
Associate Professor  
Hamamatsu

Research Area
Vacuum nanoelectronics

Research Detail
Cathode and physics: Field emission cathode, photocathode, etc  
Apprication:High frequency Vacuum tube, image tube etc

Masanori Takeda  
Lecturer  
Hamamatsu

Research Area
Terahertz technology, submillimeter-wave circuit, superconducting electronics

Research Detail
Toward terahertz (THz) applications, we have been studying on system stabilization of THz time-domain spectrometer and THz imaging technology.

Graduate School of Science and Technology, Shizuoka University
Research Area
Semiconductor engineering, Quantum electronics

Research Detail
We are developing a novel technique towards the manipulation of electronic charges and spins based on a quantum level in a silicon transistor.

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The latest version  http://gsst.shizuoka.ac.jp/printpdf/
### Research Areas and Details

**Hideyuki Itagaki**
- **Research Area:** Polymer Chemistry, Photophysical Chemistry, Soft Materials (including gels)
- **Research Detail:** We have developed gel systems such as capturing harmful ions, and obtained microscopic information by our photophysical techniques.

**Chikara Egami**
- **Research Area:** Optical Data Storage, Optical Measurement
- **Research Detail:** He has been researching laser scanning microscopy and its application such as high density data storage and 3D optical measurement.

**Ryusuke Kita**
- **Research Area:** High-temperature superconducting material, thin film growth
- **Research Detail:** We study high-temperature superconducting materials for trapping magnetic flux, and cost-effective HTS films by metal-organic deposition in order to apply them to electric power devices.

**Kenji Kobayashi**
- **Research Area:** Supramolecular Chemistry, Organic Function Chemistry
- **Research Detail:** Based on supramolecular chemistry and organic structural chemistry, we study on the molecular design, synthesis, and self-assembly of novel organic materials directed to molecular devices.

**Futoshi lwata**
- **Research Area:** Precision measurements, Nano fabrication, Surface science
- **Research Detail:** Based on precision engineering, we have been developing novel techniques of nanometer-scale measurement and fabrication.

**Toshiaki Okabayashi**
- **Research Area:** Physical Chemistry, Molecular Science, Molecular Spectroscopy
- **Research Detail:** We have been studying on physico-chemical properties of transient species (radicals and clusters) using molecular spectroscopy.

**Atsushi Kubono**
- **Research Area:** Organic and Polymeric Thin Films / Liquid Crystals
- **Research Detail:** Our research topics include a novel preparation technique of polymeric thin films with highly ordered structures, namely polymer superlattice, and basic studies for high-performance organic optoelectronic devices such as liquid crystal displays, sensors and organic transistors.

**Kenkichiro Kobayashi**
- **Research Area:** Quantum dots, oxide films
- **Research Detail:** The development of a new chemical vapor deposition technique for the fabrication of self-assembled quantum dots, and an application of quantum dots to flexible flat panel displays.
### Research Area
- **Mitsuru Kondo**
  - **Professor**
  - **Shizuoka**
  - **Coordination Chemistry**
  - **Research Detail**
    - We have focused on coordination materials that show unique functions based on the structural frameworks. Removals of toxic anions by molecular capsules, dioxygen activation by metal complexes, and dynamic coordination framework that changes responding to external stimuli have been developed.

- **Akinori Konno**
  - **Professor**
  - **Hamamatsu**
  - **Photoelectrochemistry, Organic Electrochemistry**
  - **Research Detail**
    - Development of Efficient Dye-sensitized Solar Cells which is a low-cost alternative for conventional Silicon Solar Cell

- **Masaru Shimomura**
  - **Professor**
  - **Hamamatsu**
  - **Surface Chemistry, Physical Properties of Surfaces and Interfaces**
  - **Research Detail**

- **Shigeru Tasaka**
  - **Professor**
  - **Hamamatsu**
  - **Physical Properties of Polymer Materials**
  - **Research Detail**
    - Surface molecular motions of polymeric materials are evaluated by thermal and electrical measurements.

- **Jun Kondoh**
  - **Professor**
  - **Hamamatsu**
  - **Wave electronics Engineering, Sensor engineering**
  - **Research Detail**
    - We have been developing sensors and actuators using surface waves, such as surface acoustic waves and surface plasmon waves.

- **Kenkichi Sakamoto**
  - **Professor**
  - **Shizuoka**
  - **Organoelement Chemistry, Organophotochemistry, Physical Organic Chemistry**
  - **Research Detail**
    - We focus on synthesis and properties of organosilicon compounds aiming for novel functional materials.

- **Hisao Suzuki**
  - **Professor**
  - **Hamamatsu**
  - **Materials Science, Chemical Processing of Ferroelectric Thin Films and Oxide Nanoparticles**
  - **Research Detail**
    - We have been developing ferroelectric thin films and hybrid nanoparticles by chemical solution deposition (CSD) to apply novel devices.

- **Hirokazu Tatsuoka**
  - **Professor**
  - **Hamamatsu**
  - **Semiconductor Engineering, electrical and electronic materials**
  - **Research Detail**
    - We develop safe and abundant materials for opto-electronic and thermoelectric applications. We also try to improve optical and thermoelectric properties of the materials by nano-scaled structural control.
Research Area
Quantum optics, Quantum electronics

Research Detail
Radiation and propagation of light in complex photonic systems, including random media, nano structured photonic systems.

Yasuhiro Hayakawa
Professor
Hamamatsu

Research Area
Electronic Materials

Research Detail
We aim to fabricate the device to convert light and heat into electricity. For this purpose, we have been investigating the effect of gravity on the growth and developing growth techniques for alloy semiconductors of high quality.

Desheng Fu
Professor
Hamamatsu

Research Area
Multi-functional oxides (dielectrics/piezoelectrics/pyroelectrics/electro-optics), solid state physics

Research Detail
Our group focuses on searching for the novel green multi-functional oxide materials. Through understanding the physical properties and the underlying physics of the materials, we aim at providing new guides for material design and novel materials for potential applications.

Nobuyuki Mase
Professor
Hamamatsu

Research Area
Bioorganic Chemistry, Organocatalytic Chemistry

Research Detail
"Development of organic synthetic methodology based on process and green chemistry" aiming at contribution to the enhancement of fundamental technology in the chemical industry

Tetsu Mieno
Professor
Shizuoka

Research Area
Plasma Science, Carbon-Cluster Science & Space-Environment Science

Research Detail
Production, analysis & applications of carbon nano-clusters. Experimental study of reactive plasmas. Simulation experiment related with space environment.
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<tr>
<td>Kenji Murakami</td>
<td>Professor</td>
<td>Electronic Materials Science, Surface Electronics</td>
<td>Development of energy converting functional materials and their applications to Dye-sensitized Solar Cells and Mechanoluminescent Devices etc.</td>
</tr>
<tr>
<td>Naoki Wakiya</td>
<td>Professor</td>
<td>Materials Science, Processing of Functional Nano-ceramics such as Electric and Magnetic Thin Films through Vapor Phase</td>
<td>We focus on science and technology of ceramic thin film processing especially self-assembled nano-structure.</td>
</tr>
<tr>
<td>Takao Ebihara</td>
<td>Associate Professor</td>
<td>High quality single crystal growth in rare earth and 3d-transition intermetallic compounds.</td>
<td>Investigation of electrotransport properties.</td>
</tr>
<tr>
<td>Haruhisa Kinoshita</td>
<td>Associate Professor</td>
<td>Plasma Process Apparatus, Plasma Material Application</td>
<td>Using multi-functional supermagnetron plasma apparatus developed by us, we have evaluated its performance, and applied it to the formation of electro-conductive a-CNx:H films and photovoltaic cells.</td>
</tr>
<tr>
<td>Kazuo Shimizu</td>
<td>Associate Professor</td>
<td>Atmospheric microplasma application</td>
<td>Plasma medicine, plasma actuator, surface treatment on GaN, solar cell, indoor air treatment</td>
</tr>
<tr>
<td>Rika Sekine</td>
<td>Associate Professor</td>
<td>Computational Chemistry, Theoretical Chemistry, Quantum Chemistry</td>
<td>Study on structure, properties, and reactivity for inorganic compounds and materials by molecular orbital method, molecular dynamics, and graph theory.</td>
</tr>
<tr>
<td>Yasutaka Tanaka</td>
<td>Associate Professor</td>
<td>Lithium ion battery, Supramolecular Chemistry</td>
<td>We are designing and synthesizing novel electrolyte so as to develop batteries for the following generation.</td>
</tr>
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</tr>
<tr>
<td>Atsushi Nakamura</td>
<td>Associate Professor</td>
<td>Crystal Growth, Oxide semiconductor, Graphene, 2D materials</td>
<td>Crystal growth of oxide semiconductor, Graphene for nanoelectronic devices. Synthesis of 2D materials.</td>
</tr>
<tr>
<td>Tetsuo Narumi</td>
<td>Associate Professor</td>
<td>Bioorganic Chemistry, Medicinal Chemistry, Chemical Biology, Peptide Chemistry</td>
<td>Organic Chemistry-based Drug Discovery and Chemical Biology</td>
</tr>
<tr>
<td>Kazutaka Hirakawa</td>
<td>Associate Professor</td>
<td>Photochemistry, Physical Chemistry, Biomolecular Science, Nanomaterials Science</td>
<td>Fundamental Study of Photodynamic Therapy: Development of DNA Targeting Photosensitizers and Oxygen-independent Photosensitizers</td>
</tr>
<tr>
<td>Daniel Moraru</td>
<td>Associate Professor</td>
<td>nanostructures, nanoelectronics, atomic devices</td>
<td>tunneling transport via dopant atoms in nano-transistors and nano-diodes; semiconductor device fabrication</td>
</tr>
<tr>
<td>Masamichi Yamanaka</td>
<td>Associate Professor</td>
<td>Supramolecular Chemistry, Synthetic Organic Chemistry</td>
<td>We have been developing organic molecules which can form functional supramolecular structure.</td>
</tr>
<tr>
<td>Hongpu Li</td>
<td>Associate Professor</td>
<td>Optical Fiber Devices, Nonlinear Optics</td>
<td>My current interests include the nonlinear fiber optics, fiber lasers, fiber gratings, all-optical switching, and optical information processing etc.</td>
</tr>
</tbody>
</table>
- Basics of informatics
- Computer network
- Software engineering
- Intelligent media processing
- Human interface

Hideki Asai
Professor
Hamamatsu

Research Area: Computer-Aided Engineering
Research Detail: Research of power/signal integrity analysis and EMC design for high-speed and high-density design and packaging of electronic systems

Hideto Asashiba
Professor
Shizuoka

Research Area: Representation theory of algebras, derived equivalences
Research Detail: We investigate derived equivalences between algebras (or more generally linear categories) by using categorical tools.

Yoshisuke Kumano
Professor
Shizuoka

Research Detail: Main research question is starting from whether our science and technology learning can develop new knowledge for the future generation or not within the Japanese contexts. In order to develop new models, our research targets are on innovative learning system, learning method including STEM education, e-learning, authentic assessment, curriculum development, digital contents and so on in the area of STEM (science, Technology, Engineering and Mathematics).

Tatsuhiro Konishi
Professor
Hamamatsu

Research Area: Informatics and Systems in Education
Research Detail: We are designing and constructing educational systems based on advanced technologies, such as artificial intelligence, cognitive models, natural language processing, and so on.

Sanshiro Sakai
Professor
Hamamatsu

Research Area: Software Engineering, Educational Technology
Research Detail: Based on informatics, he researches widely on education support and information system development. Especially, he has been developing the support system for programing learning, collaborative learning, program testing and reuse.

Hitoshi Saji
Professor
Hamamatsu

Research Area: Image Processing, Remote Sensing
Research Detail: We have analyzed disaster areas and road traffic information using aerial images, satellite images, and a digital map.

Akichika Shiomi
Professor
Hamamatsu

Research Detail: The system design about the hardware architecture and the embedded system for an image processing is studied.
Akihiko Sugiura
Professor
Hamamatsu
Research Area
Multimedia Encoding, Wireless Network, Application Development
Research Detail
Our main subjects are advancement of multimedia information communication technology, and its application to medical treatment and education etc..

Toshifumi Sugiura
Professor
Hamamatsu
Research Area
Stress measurement, Brain science, Non-invasive brain temperature measurement
Research Detail
Based on the application of electronic/information science to medical services and public welfare, we aim at making a social contribution.

Nobuyuki Suzuki
Professor
Shizuoka
Research Area
Mathematical logic, Non-classical logics
Research Detail
My research interests are non-classical logics and their applications, especially by semantical methods.

Yugo Takeuchi
Professor
Hamamatsu
Research Area
Cognitive Science, Human-Agent Interaction (HAI), Computer Mediated Communication, Interaction Design
Research Detail
We focus on human cognitive behavior toward other persons, artifacts, and agents, which are carried out as following studies: Basic studies on cognitive human communication, Human-Agent Interaction studies, and Real World Oriented Media Design.

Yoichi Takebayashi
Professor
Hamamatsu
Research Area
Human Interfaces, Artificial Intelligence, Medical Informatics
Research Detail
Based on complicated commonsense knowledge, we have been developing various contents to empower human society.

Tadashi Takemae
Professor
Hamamatsu
Research Area
Biological Engineering, Biomedical Instrumentation
Research Detail
We have been developing various methods which can be employed to convert a physiological event to an electrical signal.

Naoki Tanaka
Professor
Shizuoka
Research Area
Semigroups of Operators and Evolution Equations
Research Detail
Generation of semigroups of Lipschitz operators and well-posedness of abstract Cauchy problems.

Graduate School of Science and Technology, Shizuoka University
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<td>Particle theory, Cosmology</td>
<td>Nonperturbative study of quantum field theory and superstring theory.</td>
</tr>
<tr>
<td>Computer vision, Human-computer interfaces</td>
<td>The emphasis is on improvement of human-computer interfaces by providing machines with image-processing functions.</td>
</tr>
<tr>
<td>Spoken Language Processing, Speech &amp; Audio Analytics, Cognitive Computing</td>
<td>Recognition of Physical and Mental Condition by Using Audio Features, Spoken Dialogue System for Support of the Elderly</td>
</tr>
<tr>
<td>Risk Analysis, Information Systems</td>
<td>Information systems for risk analysis Knowledge management based on data science approach</td>
</tr>
<tr>
<td>Nano-satellite development, Satellites cooperative control, Space robotics, Lunar and planetary exploration</td>
<td>Space verification experiment by Nano-satellite. Robotics cooperative control of plural satellites connected by tether.</td>
</tr>
</tbody>
</table>
Department of Information Science and Technology

Koji Michishita  Professor  Hamamatsu
Research Area  Electrical and Electronic Engineering and High Voltage Engineering
Research Detail  Lightning Discharge and Lightning Protection of Electrical System

Makoto Miyazaki  Professor  Hamamatsu
Research Area  Cognitive Neuroscience, Physical Education, Sport Psychology
Research Detail  In our laboratory, we investigate the brain mechanisms underlying perception, cognition, and motor behavior using psychophysical methods and brain-function measurement techniques. The keywords of our current researches are "Body", "Time", and "Uncertainty".

Rinko Miyazaki  Professor  Hamamatsu
Research Area  Theory of functional differential equations
Research Detail  I study qualitative theory of delay differential equations, especially I'm interested in delay effects on stabilities of solutions.

Izuru Mori  Professor  Shizuoka
Research Area  Noncommutative Algebraic Geometry
Research Detail  Homological and geometric properties of noncommutative projective schemes Classification of quantum projective spaces and quantum ruled surfaces

Susumu Ishihara  Associate Professor  Hamamatsu
Research Area  Mobile Computing, Mobile Networking
Research Detail  We have been developing mechanisms for improving communication performance using cooperation of multiple mobile computers and for assisting pedestrians and drivers by sharing images and information around users.

Shin Usuki  Associate Professor  Hamamatsu
Research Area  Precision Engineering, Optical Metrology, Image Processing
Research Detail  Three dimensional in-process measurement and geometric modeling for the nano-micro manufacturing industry

Gosuke Ohashi  Associate Professor  Hamamatsu
Research Area  Digital Image Processing, Sensing via Image Information

Atsuhiko Kai  Associate Professor  Hamamatsu
Research Area  Speech processing, Spoken language interface, Pattern information processing
Research Detail  We have been developing spoken language systems including speech recognition and spoken language technologies. Our recent research topics include speech interface system, spoken document processing and car-driving signal processing.

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Research Area
Natural Language Processing, Text Mining, Artificial Intelligence, Dialog System
Research Detail
Our research includes development of various Natural Language Processing (NLP) applications and integrated platform for NLP. We also aim to develop a dialog system that naturally communicates like humans.

Research Area
Spoken Language Processing, Intelligent Information Processing, Human Interface
Research Detail
Development of Human-friendly Interaction System and Design of Human-centric Acoustic Environment.

Research Area
Speech and Acoustic Processing
Research Detail
My research interests are sound field control, sound source separation and computational auditory scene analysis based on digital signal processing.

Research Area
Geometric group theory
Research Detail
We investigate CAT(0) spaces on which CAT(0) groups act geometrically, and Coxeter groups, Davis complexes and their boundaries.

Graduate School of Science and Technology, Shizuoka University
<table>
<thead>
<tr>
<th>Professor Name</th>
<th>Title</th>
<th>Research Area</th>
<th>Research Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hiroshi Mineno</td>
<td>Associate Professor</td>
<td>Mobile &amp; Ubiquitous computing, Wireless sensor network system</td>
<td>Application on heterogeneous network convergence and global sensor network system.</td>
</tr>
<tr>
<td>Yoshimitsu Okita</td>
<td>Lecturer</td>
<td>Biomedical Engineering, Physiological Anthropology, Mibyou Technology</td>
<td>In functional food and drinks, we have been developing new measurement and analysis system for the physiological function of human</td>
</tr>
<tr>
<td>Shohei Yokoyama</td>
<td>Lecturer</td>
<td>Data Engineering, Data Science, GIS, Social Informatics, Web Engineering</td>
<td>Processing and visualization of various big data. In particular, data mining of information generated via social media and processing of spatiotemporal data.</td>
</tr>
</tbody>
</table>
- Environment ecology
- Prospect of global environment change
- Material circulation
- Energy environmental science
- Manufacturing system engineering

**Research Area**

**Precision Mechanism, Precision Measurement**

**Research Detail**

We are trying to create a machine with perfect 6-degree-of-freedom (6-DOF) motions by adopting some basic principles of the precision mechanism, and using advanced measurement and control technologies.

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**Research Area**

Geomicrobial Ecology

**Research Detail**

We conduct researches on microbial distribution, diversity, evolution, their energy metabolism and contribution to material cycles in connection with Earth's environment.

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**Research Area**

Environmental Microbiology, Bioprocess Engineering, Functional Engineering of Microorganisms

**Research Detail**

Degradation of environmental pollutants by microbial consortia and analysis of microbial community structure.

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**Research Area**

Thermal engineering, Porous media

**Research Detail**

Using the average volume theory, the derivation of the macroscopic governing equations, it is the determination of the model coefficients. In addition, I have done research on industrial applications.

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**Research Area**

Quaternary paleoceanography

**Research Detail**

I examine response of shallow marine ecosystem to Quaternary climate changes.

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**Research Area**

Turbulent multiphase flows, Applications of Advanced Laser Techniques to Fluid Mechanics, Countermeasure technique of CO2

**Research Detail**

He is experimentally investigating turbulent multiphase flows encountered in fields widely ranging from nature to industrial plants using advanced laser and optical technology.

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**Research Area**

Supercritical fluid technology, Chemical engineering

**Research Detail**

We study the fundamental and application research on supercritical fluids. Utilization technique of wastes using supercritical and subcritical water or supercritical alcohol, organic synthesis and polymerization in supercritical fluids and measurement of the fundamental data of supercritical fluid with high pressure spectroscopy have been developed.

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**Research Area**

Zootaxonomy, Biodiversity, Paleobiology

**Research Detail**

Based on taxonomy, I study on the natural history of Ostracoda (Crustacea: Arthropoda) in view of evolution.
<table>
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</thead>
<tbody>
<tr>
<td><strong>Akira Nakayama</strong>&lt;br&gt;Professor&lt;br&gt;Hamamatsu&lt;br&gt;Research Area&lt;br&gt;Heat and fluid flow in porous media, Numerical simulation of heat and fluid flow, Boiheat transfer</td>
<td></td>
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<tr>
<td><strong>Toshihiko Noguchi</strong>&lt;br&gt;Professor&lt;br&gt;Hamamatsu&lt;br&gt;Research Area&lt;br&gt;Power Electronics&lt;br&gt;Research Detail&lt;br&gt;In our laboratory, power converters and motor drives are mainly focused on. The former covers various power conversion techniques, e.g., novel topologies of inverters/rectifiers, implementation technologies of next-generation semiconductor devices, matrix converter control, application specific power supplies, etc. The latter includes various sensorless motor control techniques, motor parameter identification, development of ultra high-speed motors, etc.</td>
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<tr>
<td><strong>Kunio Hayakawa</strong>&lt;br&gt;Professor&lt;br&gt;Hamamatsu&lt;br&gt;Research Area&lt;br&gt;Material Forming&lt;br&gt;Research Detail&lt;br&gt;Process simulation of material forming process, Evaluation of deformation, damage and service life of materials. Evaluation of tribological property in material forming process</td>
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<tr>
<td><strong>Mitsuhiro Fukuta</strong>&lt;br&gt;Professor&lt;br&gt;Hamamatsu&lt;br&gt;Research Area&lt;br&gt;Refrigeration, Fluid Machinery, Energy Conversion&lt;br&gt;Research Detail&lt;br&gt;Development of high efficiency and reliable fluid machinery. Clarifying internal phenomena in refrigeration compressors. Instrumentation in refrigeration cycles</td>
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<tr>
<td><strong>Choji Fukuhara</strong>&lt;br&gt;Professor&lt;br&gt;Hamamatsu&lt;br&gt;Research Area&lt;br&gt;Catalysis chemistry, Reaction engineering, Physical chemistry, Chemical engineering&lt;br&gt;Research Detail&lt;br&gt;New energy creation, Renewable energy utilization, Novel-type reactor and catalyst. Hydrogen production, CO2 utilization for useful resources</td>
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<tr>
<td><strong>Taketomo Fujiwara</strong>&lt;br&gt;Professor&lt;br&gt;Shizuoka&lt;br&gt;Research Area&lt;br&gt;Microbial biochemistry, environmental microbiology&lt;br&gt;Research Detail&lt;br&gt;Biochemical investigation on nitrifying and denitrifying microorganisms have been performed in my lab.</td>
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<tr>
<td><strong>Hiroyuki Futamata</strong>&lt;br&gt;Professor&lt;br&gt;Hamamatsu&lt;br&gt;Research Detail&lt;br&gt;Our research topics are&lt;br&gt;1) Bioremediation targeting tetrachloroethene,&lt;br&gt;2) Analysis of nitrogen cycle for cleaning up eutrophication,&lt;br&gt;3) Microbial fuel cells and&lt;br&gt;4) Understanding of microbial ecosystem.</td>
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<tr>
<td><strong>Beatriz Estela Casareto</strong>&lt;br&gt;Professor&lt;br&gt;Shizuoka&lt;br&gt;Research Area&lt;br&gt;marine biology, microbiology, microbial food webs, marine biomass&lt;br&gt;Research Detail&lt;br&gt;I would like to clarify how these ecosystems respond to environmental stressors and within what limits of tolerance they can function by keeping their stability, biodiversity and health.</td>
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</tr>
</tbody>
</table>
**Toshiaki Masuda**
Professor  
**Research Area**  
Structural Petrology  
**Research Detail**  
I'm learning the mechanical history of the Earth by investigating microstructures of deformed rocks.

**Yuichi Morishita**
Professor  
**Research Area**  
Ore geology, Isotope geology, Secondary ion mass spectrometry  
**Research Detail**  
Studies on the genesis of mineral deposits that include rare metals and gold deposits using a gas isotope ratio mass spectrometry or secondary ion mass spectrometry.

**Masayuki Yokozawa**
Professor  
**Research Area**  
Ecological Modeling, Responses of Ecosystem to Environmental Change, Climate Change Impacts  
**Research Detail**  
Modeling the responses of terrestrial ecosystem to environmental changes for elucidating the mechanisms and evaluating the climate change impacts.

**Quan Wang**
Professor  
**Research Area**  
Remote Sensing Applications, Ecological Modeling, Environmental Change  
**Research Detail**  
Main research foci are on multiple-scale C/H2O simulation models and remote sensing applications. Special attentions are paid for retrieval of required parameters via remote sensing techniques for ecological models at various scales, as well as data-fusion for multiple-scale simulations under global change.

**Katsuyoshi Michibayashi**
Professor  
**Research Area**  
Earth and Planetary Science, Structural Geology, Mantle study  
**Research Detail**  
Mantle rheology to understand the dynamics of our planet. Deep ocean floor is one of the main research fields by using submersible Shinkai6500.

**Satoru Morita**
Professor  
**Research Area**  
Nonlinear dynamics, Mathematical Biology, Complex Networks  
**Research Detail**  
Mathematical modeling to study nonlinear phenomena in complex systems. The goal is to clarify the relationship between function and structure.

**Jin Yoshimura**
Professor  
**Research Area**  
Mathematical Biology, Evolutionary Ecology, Economics, Operations Research  
**Research Detail**  
We study the basic principles of the effects of environmental uncertainty on adaptive evolution, e.g., the evolutionary history of periodical cicadas.

**Junichi Asama**
Associate Professor  
**Research Area**  
Precision Mechanical System  
**Research Detail**  
I am working on bearingless motor, magnetic bearing, and power Mechatronics. Please visit the group website:
Yasuhiro Oya
Associate Professor

Research Area
Chemistry for nuclear fusion and nuclear energy system,
Chemistry for beta-emission nuclides

Research Detail
Elucidation of interaction mechanism between radionuclides and materials in fusion reactor and nuclear energy system. Behavior of beta-emission nuclides in environment.

Hiroyuki Kimura
Associate Professor

Research Area
Geomicrobiology, Environmental Genomics

Research Detail
We carry out studies on physiology and ecology of prokaryotes inhabiting oceanic, subsurface, and extreme environments. We also develop bioenergy production system using subterranean microbial community.

Chang Yi Kong
Associate Professor

Research Area
Supercritical Fluids, Physical Properties, Carbon Nanomaterials.

Research Detail
Involved in carbon nanomaterials (such as graphene oxide, graphene and nanocomposite material, etc.) and in thermodynamic properties in supercritical fluids.

Toshiyuki Sanada
Associate Professor

Research Area
Fluids Engineering, Multiphase Flow, Physical Cleaning

Research Detail
Elucidation of physics of dispersed multiphase flow (e.g. bubbles or droplets), and its application for surface cleaning.

Yoshinobu Shimamura
Associate Professor

Research Area
Composite materials, Strength of materials

Research Detail
Our group does research on strength of composite materials and very high cycle fatigue of metals.

Makoto Matsui
Associate Professor

Research Area
High temperature gas dynamics, plasma diagnostics, space propulsion system

Research Detail
Developments of novel high enthalpy wind tunnel using laser plasma and its diagnostics methods using spectroscopies.

Makoto Yanaga
Associate Professor

Research Area
Nuclear and radiochemistry, Bioinorganic chemistry

Research Detail
Speciation of radiocesium and removal from soil, Studies on behavior of trace metal elements in living organisms by means of radioscientific techniques, Distribution of radioactive cesium of surface soil in Shizuoka prefecture.

Takumi Chikada
Lecturer

Research Area
Advanced energy chemistry, Fusion engineering, Radiochemistry

Research Detail
For R&D in advanced energy systems such as hydrogen energy and fusion reactors, we study on physical and chemical behaviors of materials, in particular hydrogen-material interactions.

The latest version http://gsst.shizuoka.ac.jp/printpdf/
- Genomics and proteomics
- Molecular and cellular morphology and embryology
- Chemical biology
- Bio-chemo informatics
- Bio-engineering

**Department of Bioscience**

**External signals**
- **Internal engine**
- **Cell proliferation**

- **Takashi Ushimaru**
  Professor  Shizuoka

  **Research Area**
  Cell Biology, Molecular Biology

  **Research Detail**
  Molecular mechanisms of cell proliferation in response to external signals and stresses including nutrient starvation. Molecular mechanisms of chromosome separation and segregation in mitosis.

- **Hirokazu Kawagishi**
  Professor  Shizuoka

  **Research Area**
  Natural products chemistry, Bioorganic chemistry, Biochemistry

  **Research Detail**
  We have been studying biologically active compounds including proteins (lectin, etc.) and small molecules from mushrooms.

- **Yoko Kimura**
  Professor  Shizuoka

  **Research Area**
  Molecular Biology, Cell Biology

  **Research Detail**
  We are investigating protein quality control and stress response using yeast.

- **Masakazu Suzuki**
  Professor  Shizuoka

  **Research Area**
  Endocrinology

  **Research Detail**
  We study the molecular mechanisms for the adaptation of vertebrates to environments, maintenance of homeostasis, reproduction, development of endocrine organs, mainly using fish and amphibians, to understand the diversity and evolution of vertebrates, and further the fundamental biological processes common to all vertebrates. We also intend to apply novel functional molecules to advanced medical and industrial technologies.

- **Nobuyoshi Shiojiri**
  Professor  Shizuoka

  **Research Area**
  Developmental Biology, Regenerative Medicine

  **Research Detail**
  Research in our laboratory focuses on the cellular and molecular events in liver development and regeneration, and on their application to regenerative medicine.

- **Yuichii Takikawa**
  Professor  Shizuoka

  **Research Area**
  Plant Pathology

  **Research Detail**
  The main focus of my research is identification and classification of plant pathogenic bacteria, especially on analysing how genetic differences have caused the pathogens to have different host plants and symptoms, and on rapid and easy detection methods of them.

- **Hirobumi Takenouchi**
  Professor  Shizuoka

  **Research Area**
  philosophy, bioethics, environmental ethics

  **Research Detail**
  Focusing on the inseparable relationship between life(bios) and the environment, our laboratory looks into current questions in the modern society as to achieve a new integrative way of research for bioethics and environmental ethics.

- **Toshinobu Tokumoto**
  Professor  Shizuoka

  **Research Area**
  Reproductive Biology

  **Research Detail**
  We want to demonstrate the molecular mechanisms to enter the meiotic cell division through membrane steroid receptor on oocyte surface by non-genomic steroid actions.
**Department of Bioscience**

**Yasushi Todoroki**  
Professor  
Shizuoka  

**Research Area**  
Bioorganic Chemistry  

**Research Detail**  
We have been researching on creation and application of synthetic chemical regulators of biosynthesis, reception and catabolism of plant signal molecules and secondary metabolites.

**Motonori Tomita**  
Professor  
Shizuoka  

**Research Area**  
Functional Genomics, Gene Isolation, Breeding Biotechnology  

**Research Detail**  
Gene Identification and Genetic Modification of Rice and Wheat by Genome-Wide Association Study.

**Enoch Y. Park**  
Professor  
Shizuoka  

**Research Area**  
Molecular Biotechnology  

**Research Detail**  
High throughput gene expression using silkworm bacmid and innovative application of biological function. Based on this research we are expanding our goal from silkroad to bioroad.

**Masakazu Hara**  
Professor  
Shizuoka  

**Research Area**  
Plant Physiology, Plant Biotechnology  

**Research Detail**  
We investigate functions of plant-specific stress proteins, and our goal is to produce new bio-materials by using these proteins.

**Hirofumi Hirai**  
Professor  
Shizuoka  

**Research Area**  
Biochemistry for Woody Plant, and Environment  

**Research Detail**  
We have been studying on molecular breedings of white-rot fungi which can produce ethanol from woody biomass, and which can degrade environmental pollutions effectively.

**Tatsuya Morita**  
Professor  
Shizuoka  

**Research Area**  
Food and Nutritional Chemistry  

**Research Detail**  
Current research interest is the interaction between dietary fibers, indigestible oligosaccharides and resistant starches, and the digestive tract lining, particularly focusing on (1) the intestinal mucin & IgA secretion, and (2) their related effects on intestinal barrier function.

**Kiyoshi Yamauchi**  
Professor  
Shizuoka  

**Research Area**  
Environmental Endocrinology  

**Research Detail**  
I have focused on the effects of environmental chemicals on amphibian development and the endocrine system.

**Masahito Yamazaki**  
Professor  
Shizuoka  

**Research Area**  
Biomembranes, Lipid membranes, Membrane Proteins, Cytoskeleton, Artificial Cells, Soft Matter  

**Research Detail**  
We investigate biomembranes comosed of lipid membranes, membrane proteins, and cytoskeletons from a biophysical point of view to reveal their physical and biological mechanisms. The single GUV method, Cubic phase, Nanobioscience.
**Research Area**  
Molecular cell biology, Biochemistry  
**Research Detail**  
We have been studying molecular mechanisms regulating genome dynamics to understand how genetic information is properly maintained and faithfully transmitted to offsprings using fission yeast as a model organism.

**Research Area**  
Biotechnology, Protein engineering  
**Research Detail**  
The improvement of efficient recombinant protein production using silkworms is carried out and the application of silkworm-produced recombinant proteins to various fields in our life science is aimed.

**Research Area**  
Animal physiology and biochemistry, Food biochemistry  
**Research Detail**  
Effects of food components on the development of several diseases. Effects of social stress on the development of metabolic syndrome. Study on the mechanism of immunoglobulin secretion as a component of milk in mammary gland.

**Research Area**  
Plant Pathology  
**Research Detail**  
Our research is mainly focused on the interaction between plants and their pathogenic bacteria to study molecular mechanisms of virulence.

**Research Area**  
Environmental Microbiology, Microbial genetics  
**Research Detail**  
Analyses of behaviors of mobile genetic elements (plasmids, transposons) in microbial consortia.

**Research Area**  
Glycobiology  
**Research Detail**  
We have been developing sugar chain materials that will have inhibitory effects on infections of H. pylori and aggregation of Aβ.
Purpose / Characteristics
The Graduate School of Science and Technology, Education Division strives to clearly communicate the characteristics and goals of the education and research activities conducted at Shizuoka University to the wider community, and to serve as an internationally renowned institution for research and education. Our goal is to produce highly skilled engineers and researchers with high levels of expertise in their field of specialization, as well as a broader level of knowledge and international sensibility for navigating the current global environment.

Training Human Resources
Our goal is to provide an education that is informed by local characteristics and contemporary needs, and to cultivate skilled engineers and researchers who possess highly specialized knowledge as well as a broader level of sophistication and international sensibility for navigating the current global environment. Instead of adopting the conventional graduate school organizational structure, we have established separate departments for education and research. This enables us to adopt a broad-based approach in the educational arena while offering a more narrowly focused doctoral program in the research arena.

Characteristics of the Educational Curriculum
In addition to the conventional specialized courses, this graduate school offers short-term intensive seminars. These will address general topics that broadly cover the basic knowledge needed for a deeper understanding of the field of the student's department, and basic common subjects that teach students about topics such as intellectual property, management, ethics, and the environment, all of which will be of fundamental importance to researchers in the future. Seminars will also cover new fields to expand the student's breadth of knowledge beyond their field of specialization, and science and technology paper presentation methods, which will teach students how to present a paper at an academic meeting and how to compile their research findings into an English-language article. We will also provide practical educational components by offering internship opportunities that students can use to earn independent research credits.

Characteristics of the Education and Research Fields
Students at the Hamamatsu Campus will focus on the scientific fields of electronics, optics, matter, and information, especially in relation to nanovision science, while students at the Shizuoka Campus will engage in international education and research activities in the fields of science, environmental science (focused on the study of agriculture while incorporating the study of engineering), and bioscience. These fields of specialization are consistent with the four key fields of science and technology highlighted by the Japanese government in a Cabinet decision dated June 4, 2004 (Life science, information and telecommunications, the environment, and nanotechnology/materials).

Shaping our students
We train high-tech engineers and researchers who learn in-depth knowledge of specialized disciplines and obtain a broad-based education that enables them to meet the needs and expectations of the community and international society.

Educational objectives
The graduate school provides a T-style of education in which specialized courses and courses in relevant new emerging areas (the vertical bar of the T) are combined with broad-ranging general courses enabling students to better contribute and meet the needs of society (the cross bar of the T), while nurturing individuals who exhibit creative energy, self-solving ability, and communication skills.

Type of students we are looking for
The graduate school is looking to admit students
- who are passionately committed to the pursuit of new knowledge and truth in the natural sciences,
- who never give up and are self-motivated and challenged to take on tough issues, and
- who demonstrate leadership coupled with a cooperative spirit in dealing with all kinds of situations.

Admission Policy
Department of Nanovision Technology
A new research field will be created by uniting the engineers of image science and researchers of nanoscience. The nano field control of individual photon and electron will be introduced for the first time in the world in the image science, which will be called "Nanovision Science". The objective of creating this field will be to rear students so that they will be able to contribute strongly in the development of industries as engineers and researchers. They will be judged on the basis of their ability, academic achievement, suitability, etc.

Department of Optoelectronics and Nanostructure Science
The aim of the department is to develop your professional capabilities to innovate in future technologies and to take part in the initiative activities based on controlling of materials function and interaction between photons and nanostructure materials in the field of expanding industry such as communication, measurements and chemical industries thorough a knowledge of fundamental sciences and applying them to their practical purposes. The applicants are required to provide their ability, scholarship and aptitude for achieving the admission policy.

Department of Information Science and Technology
Department of Information Science and Technology aims based on informatics, engineering and basic sciences to educate specialized researchers who develop novel basic information technologies and advanced engineers of information systems with outstanding abilities of information techniques. Applicants are examined from the view point of academic abilities for the policy.

Department of Environment and Energy System
The application of basic principles and equations dealing with water, air, and solid and hazardous wastes; material and energy balances; and chemical and biogeochemical cycles for solving environmental issues. Topics include synthesis courses of water treatment, environmental change and biogeochemical cycles, analysis of ecosystems, geomicrobiology, CO2 sequestration, and environmental legislation. Our goal is new innovative science and technology, through lectures and discussions linking a broad range of scientific and engineering topics.

Department of Biosciences
The department provides education and training to the students by conducting frontier researches directed to basic biotechnology, on the basis of cell biology, developmental biology, integrative biology, biophysics, microbiology, genomics, biotechnology, bioorganic chemistry, food science, and bioinformatics, being expected to take the initiative in the academic and scientific research leaders with entrepreneurship in the new biointerfacial areas.
For Courses

1) Lectures and Seminars
   - Specialized Courses
   - Special Lectures
   - Workshops

2) Short-term intensive seminars
   for acquiring broad knowledge
   - General Topics
   - New Fields
   - Basic Common Subjects

3) Doctoral Dissertation
   - Independent Research

Course Descriptions

(1) Specialized Courses
Students must prepare and review the material covered to gain a thorough understanding of the course content. Students may only take one of these courses each year.

(2) Short-Term Intensive Seminars
Students will primarily take short-term intensive seminars in topics related to their major, but they can also take several seminars outside of their major to expand their knowledge of related fields and their general breadth of knowledge.
Short-term intensive seminars are divided into three types, based on the topics covered: general topics, new fields, and basic common subjects. These three categories are outlined below.

«General Topics»
By focusing on the essential components of the specialized courses, these seminars cover basic knowledge necessary for understanding the research fields covered by each major, and offer students exposure to a broader range of research fields than might be strictly included within their majors.

«New Fields»
Students acquire knowledge of areas that are closely connected to their field of study or are expected to produce important developments in the future. This offers students a greater breadth of knowledge of their research fields. The professors at both Hamamatsu Campus and Shizuoka Campus cooperate with one another to offer lectures in new fields for students in different fields and majors.

«Basic Common Subjects»
With international competition and conflict over ownership of intellectual property in the field of science and technology expected to grow even more fierce in the 21st century, contemporary researchers and engineers need to have a fundamental respect for global environmental preservation and human welfare. To produce people who can deal with these types of issues, the graduate school offers courses on such basic common subjects as intellectual property, management, ethics, and science and technology paper compilation methods.

(3) Special Lectures
Students are encouraged to attend guest lectures conducted by prominent researchers both inside and outside of Japan and other specially arranged lectures. These opportunities enable students to obtain advanced knowledge and cutting-edge information in their fields of specialization.

(4) Internships
In order for Japanese industry to achieve growth in an increasingly competitive international environment, the industrial sector must be open to input from highly skilled and qualified engineers. It is vital that engineers form close ties with the industrial sector from as early as their graduate school years, and ensure the importance and value of their own research by being familiar with the technological development issues being faced by industry.

To do this, students can take advantage of internships that give them opportunities to work at companies for a specific period of time as part of their independent research. Their experiences are likely not only to increase their level of interest in their academic research and education, but also to offer some advantages in their job search after graduation.

Organizational Structure
The professors who are part of this graduate school are formally affiliated with the Science and Technology Research Department, comprised of the Hamamatsu Research Center on the Hamamatsu Campus and the Shizuoka Research Center on the Shizuoka Campus.

Associate Advisor System
This graduate school uses an associate advisor system to ensure that students' educational and research activities proceed smoothly. Each student has two additional advisors to their senior advisor: the first is a professor in the student's major who provides guidance regarding the selection of a research topic, research activities, and dissertation writing, reflecting a different perspective from the senior advisor, and provides a broader level of support for the student's education, while the second advisor provides guidance and advice to help ensure that all of the student's educational and research activities other than his/her dissertation proceed smoothly.
A student will be conferred with his/her degree after attending graduate school for three or more years, earning the designated number of credits, and passing his/her doctoral dissertation defense and exam (after obtaining the necessary research guidance). However, for those who demonstrate outstanding research performance during their period of attendance, one year (or three years total for those who have completed their master's degree or the early portion of their doctoral degree after two years or less of graduate school attendance) or more of graduate school attendance will suffice.

According to the stipulations of Article 70-2 of the School Education Law Enforcement Regulation regarding graduate school admission requirements, when a student recognized as possessing academic capabilities equivalent to or greater than a person who holds a master's degree enrolls in a graduate program, that student is to be awarded a degree upon attending graduate school for three or more years, earning the designated number of credits, and passing his/her doctoral dissertation defense and exam (after obtaining the necessary research guidance). However, for those who demonstrate outstanding research performance during their period of attendance, one year or more of graduate school attendance will suffice.

Number of Course Credits Needed for Degree Completion

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Electives and Required Electives</th>
<th>Required No. Credits</th>
<th>Total</th>
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<tbody>
<tr>
<td>- Workshops: 2 credits</td>
<td>- Specialized courses: 8 credits (Required Elective) (Department of Informatics: 12 credits / Department of Environment and Energy System: 10 credits)</td>
<td>2 credits or more</td>
<td>11 credits or more</td>
</tr>
<tr>
<td>- Independent research: 3 credits</td>
<td>- Short-term intensive seminars: 21 credits (Elective) (General topics: 10 credits / New Fields: 6 credits / Basic Common Subjects: 5 credits)</td>
<td>4 credits or more</td>
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Number of Published Articles Needed for Degree Completion

Determined by the student's field of specialization

Handling of Special Cases (Early Completion)

In the event that a student rapidly achieves his/her stated research goals during the course of study, or has an article published in a highly prestigious international journal or receives international acclaim for his/her work, the student's research will be examined by the graduate school. If it is deemed to be of a caliber worthy of a doctoral degree, the student will be recognized as having completed his/her degree early (after a shorter than standard period of study). Upon examining the student's progress on his/her coursework and dissertation, if the student's senior and associate advisors determine, that the student qualifies as a candidate for early completion, approval must be obtained from an investigatory committee comprised of five or more professors, including several professors from other departments, such that subsequent guidance and handling of the student's advisory needs will be undertaken by this investigatory committee.

The following conditions will be used to determine whether a student has demonstrated outstanding research performance:

1. The student rapidly achieves the stated goals of his/her research during the course of study.
2. An article by the student wins an academic society publication award, or receives high international acclaim due to being published in a highly prestigious international journal.
3. An article by the student is published in a key journal in his/her field of study or in a journal with a high impact factor.

Degree Completion

The degree conferred shall be a doctoral degree, and the name of the department indicated on the degree shall be one of the following, depending on the nature of the student's education and research:

- Philosophy
- Science
- Engineering
- Informatics
- Agriculture
Academic Fees

(1) Enrollment and Tuition Fees

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<th>Enrollment</th>
<th>Tuition</th>
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<td>FY 2008</td>
<td>¥282,000</td>
<td>¥536,800 per year (¥267,900 per semester)</td>
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</table>

Tuition should be paid in two installments, in April and October. However, payment for the first semester of the student's first year of enrollment should be paid at the time of enrollment. Students may also pay the full year's tuition upon enrollment.

(2) Academic Fee Exemption

Enrollment Fee Exemption
Students for whom the payment of the enrollment fee poses an extreme hardship may be eligible for a full or partial waiver of the fee. Eligibility will be considered in cases where the student has demonstrated scholastic excellence but is having problems paying the tuition fee due to financial hardship, or where the student's main educational funding provider has died or the student or his/her educational funding provider has been the victim of a natural disaster within a year prior to the student's enrollment.

Tuition Exemption
Students for whom the payment of tuition poses an extreme hardship may be eligible for a full or partial tuition waiver. Eligibility will be considered in cases where the student has demonstrated scholastic excellence but is having problems paying tuition due to financial hardship, or where the student's main educational funding provider has died or the student or his/her educational funding provider has been the victim of a natural disaster within six months (one year in the case of newly enrolled students) prior to the tuition due date for each semester of tuition.

Scholarships and Financial Aid

Japan Scholarship Foundation Scholarship
Students who have demonstrated scholastic excellence but who are experiencing financial hardship may apply for the following scholarship.

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<tr>
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<th>Monthly Scholarship Amount</th>
<th>Award Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2008</td>
<td>¥122,000</td>
<td>Within the standard school year</td>
</tr>
</tbody>
</table>

Japan Society for the Promotion of Science Special Researcher
Doctoral degree students with outstanding research skills may be selected to receive the following scholarship.

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<thead>
<tr>
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<th>Monthly Scholarship Amount</th>
<th>Award Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2008</td>
<td>¥200,000</td>
<td>Within the standard school year</td>
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</tbody>
</table>

TA / RA
Students may serve as teaching assistants (TAs) who help guide graduate students and undergraduate students in their studies or research assistants (RAs) who provide research assistance to professors. If hired for one of these positions, the student will receive compensation in the amount of approximately ¥370,000 per year.

Other Scholarships
We will provide information regarding various scholarships offered by private companies, foundations, and other scholarship societies. Some scholarships are only available for foreign students, and we will also actively provide information about these scholarships as well.
Shizuoka University was founded on May 31, 1949. The 2 campuses are in Shizuoka City and Hamamatsu City. Our educational goal is to prepare good citizens who will take leadership roles, drawing on international perspectives, to solve problems in an increasingly global society. With the core educational requirements as a solid foundation, we expect our students to develop specialist expertise and broad cultural understanding. Shizuoka University accepts both domestic and international students who:

1. have a great appetite for knowledge and approach new tasks without hesitating.
2. possess communicative ability, and respect differences, both in culture and in individual mentality.
3. are open minded and have unique ideas.
4. have a curious mind with regard to nature, society and culture.

There are 9,000 students in 6 faculties and 1,500 students in 5 graduate schools in Shizuoka University. Shizuoka University devotes a large effort toward international exchange. At present, some 300 international students, both graduate and undergraduate, are studying and are engaged in research. Shizuoka University promotes productive relationships with sister universities actively. Students from sister universities can study at Shizuoka University for six months or one year without tuition fees.

Shizuoka Prefecture is located in between Japan's capital city Tokyo and the second biggest city Osaka. Taking advantage of transportation to the big cities because of the good location, industry, agriculture, forestry and fisheries, and tourism are well developed.

Shizuoka City has a population of about 700 thousands (as of January 2016); it is the prefectural capital and the center of the prefectural administration, economy, and information.

Hamamatsu City has a population of about 800 thousands (as of January 2016); it has developed as an industrial city with world's leading companies manufacturing motorcycles and music instruments.
Location of Shizuoka University

Shizuoka Campus

[Transportation]
1. Get on the Shizutetsu Just Line bus bound for "Shizuoka-Daigaku" or "Ooya" at platform No.8 at the bus terminal at the north exit of JR Shizuoka Station, and get off at “Shizudaimae” or “Katayama”. (Time required: 25 min.; 5 to 7 buses per hour)
2. Get on the Shizutetsu Just Line bus bound for "Shizuoka-Daigaku" at platform No.2 at the bus terminal at the south exit of JR Higashi Shizuoka Station and get off at “Shizukadaigakumae”. (Time required: About 15 min.; 3 buses at 8:00 and 1 bus at 9:00 in the morning, and 1 bus each at 16:00 and 17:00 in the evening) *Bus service is suspended on Saturdays, Sundays and National Holidays.

Hamamatsu Campus

[Transportation]
From the North Exit of Hamamatsu Station, take a bus from bus stop No.15 or 16. (approximately 20 minites' ride)

Note: All buses go to Shizuoka University except "Fumioka Mawari"

Location: 3-5-1 Johoku, Hamamatsu-shi

The latest version http://gsst.shizuoka.ac.jp/printpdf/