UCEAP 2026 Summer Lab Research in Science
Host Laboratory Information

UCEAP nominees must read the descriptions and requirements for each lab closely before submitting their documents to the School of Science, UTokyo, for the final selection process.

Department	Name and Title of Hosting Faculty Member	Laboratory Website	Research Topic & Research Description
Mathematics	Yasuyuki KAWAHIGASHI (Professor)	https://www.ms.u-tokyo.ac.jp/~yasuyuki/index-e.html	Operator Algebras. This is a kind of infinite dimensional linear algebra related to quantum mechanics.
			Special Academic Conditions Required for Research
			1) Prerequisite knowledge and/or specific skills, and required level of proficiency Basic linear algebra
			2) Required major field(s) of study Mathematics
			3) Academic background or research project experience to be considered during selection Some knowledge on quantum physics would be better.
			4) Selection and evaluation criteria (if any) None
Department	**Name and Title of Hosting Faculty Member**	**Laboratory Website**	**Special Academic Conditions Required for Research**
Information Science	Takeo IGARASHI (Professor)	https://www-ui.is.s.u-tokyo.ac.jp/	User Interface and Interactive Computer Graphics
			Special Academic Conditions Required for Research
			1) Prerequisite knowledge and/or specific skills, and required level of proficiency basic computer science. Programming skill. Interest in graphics and interaction
			2) Required major field(s) of study computer science
			3) Academic background or research project experience to be considered during selection research or development experience is appreciated
			4) Selection and evaluation criteria (if any) research plan or proposal (explanation of what kind of project you want to wok on).
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Physics	Yasushi OKADA (Professor)	https://www.okada-lab.phys.s.u-tokyo.ac.jp/index.php/en/	Development of Advanced Optical Microscopy Techniques and their Application in Cell Biology Research Our laboratory specializes in developing cutting-edge optical microscopy technologies, like super-resolution microscopy, and their applications in molecular cell biology. Interns will gain hands-on experience in technical development, delving into microscope optics, probes, or image processing, or directly in cellular biology research, such as live-cell imaging and single-molecule measurements in living cells or in vitro.
			Special Academic Conditions Required for Research
			1) Prerequisite knowledge and/or specific skills, and required level of proficiency Basic knowledge of microscope optics and/or cell biology
			2) Required major field(s) of study Biophysics, cell biology or basic optics
			3) Academic background or research project experience to be considered during selection Animal cell culture, microscopy, live cell imaging, image processing, machine learning, molecular cloning
			4) Selection and evaluation criteria (if any) Candidates will be evaluated based on their level of enthusiasm, specificity of interests, and how well their aspirations align with the direction and objectives of our laboratory

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Physics	Kuniaki KONISHI (Associate Professor)	https://www.kkns.ipst.s.u-tokyo.ac.jp/en/home	We are investigating new physical phenomena caused by the interaction of light with nano- and micro-scale ultra-fine artificial structures fabricated by state-of-the-art microfabrication techniques, and their application to optical control (Metasurface and Meta-optics). Furthermore, based on condensed matter physics, we are exploring the scientific principles of laser processing to understand why light can break things, and are developing new methods for fabricating micro three-dimensional structures using state-of-the-art ultrashort pulsed lasers. This UTRIP program provides an opportunity to experience the fundamentals of metamaterials or laser processing research.
			Special Academic Conditions Required for Research
			1) Prerequisite knowledge and/or specific skills, and required level of proficiency Basic knowledge of optics, lasers, and solid state physics. English language skills for communicating.
			2) Required major field(s) of study Optics, Solid State Physics
			3) Academic background or research project experience to be considered during selection It is better for the student to have previous experience of conducting optical experiments and working with lasers.
			4) Selection and evaluation criteria (if any) Priority will be given to junior class students who are interested in future graduate study in Japan
Department	**Name and Title of Hosting Faculty Member**	**Laboratory Website**	**Research Topic & Research Description**
Earth & Planetary Science	Katsuro KATSUMATA (Professor)	https://www-aos.eps.s.u-tokyo.ac.jp/~katsumata/index-e.html	Since seawater is opaque to radio waves, remote sensing of interior ocean is virtually impossible. Ship-based observation has been used to investigate subsurface properties of the ocean such as temperature, salinity, dissolved oxygen, etc. Using these hydrographic data accumulated over decades from the 1980s, we can study decadal variations of the ocean. For this project, students choose a section or two and study decadal variabilities observed over years. We endeavour to intepret these changes in terms of physics behind the phenomena.
			Special Academic Conditions Required for Research
			1) Prerequisite knowledge and/or specific skills, and required level of proficiency Geophysical fluid dynamics. The main tool of the project is computer. It is expected the student is familiar with (at least) one of the following computer languages; Matlab, Python, Perl, Ruby, C, FORTRAN, and Haskell.
			2) Required major field(s) of study Physics including fluid mechanics and Mathematics
			3) Academic background or research project experience to be considered during selection Some experience in data processing (not limited to geophysics though).
			4) Selection and evaluation criteria (if any) None
Department	**Name and Title of Hosting Faculty Member**	**Laboratory Website**	**Research Topic & Research Description**
Earth & Planetary Science	Yosuke AOKI (Associate Professor)	https://www.eri.u-tokyo.ac.jp/people/yaoki/	Modeling earthquake and volcano deformation using space geodetic data Earthquake and volcanic activity involves faulting or migration of volcanic fluids below Earth's surface, and they can be detected as the deformation of the Earth's surface. This internship investigates the distribution of slip distribution due to an earthquake or images migration of magmatic fluids associated with volacnic activity. Choice of earthquake or volcano topic is up to the trainee.
			Special Academic Conditions Required for Research
			1) Prerequisite knowledge and/or specific skills, and required level of proficiency Some experience of scientific computing with Linux or Macintosh system is required.
			2) Required major field(s) of study Basic physics and mathematics. Some knowledge about Geology is a plus but not required.
			3) Academic background or research project experience to be considered during selection Geophysics, Geology, Mathematics, Physics, or related field
			4) Selection and evaluation criteria (if any) Passion and enthusiasm for Earth Science

Department	Name and Title of Hosting Faculty Member	Laboratory Website	Research Topic & Research Description
Chemistry	Keisuke GODA (Professor)	https://www.goda.chem.s.u-tokyo.ac.jp/	At Goda Lab, our primary mission is to develop "serendipity-enabling technologies" that align with Louis Pasteur's famous quote, "Chance (serendipity) favors the prepared mind." Our focus is on developing innovative tools for molecular imaging and spectroscopy by integrating photonics, nanotechnology, microfluidics, and data science. By utilizing these tools, we aim to discover unknown phenomena, elucidate mechanisms, and explore new applications in science, industry, and medicine. We employ theoretical, experimental, and computational techniques to tackle critical problems. Additionally, we are committed to cultivating the next generation of global leaders who will shape the world in the 21st century. We foster an international and interdisciplinary research environment that values flat human relationships, and we actively seek out talented individuals from any university or company, regardless of their field of study. **Special Academic Conditions Required for Research** **1) Prerequisite knowledge and/or specific skills, and required level of proficiency** 1. Applicants must possess foundational knowledge in molecular imaging, spectroscopy, photonics, nanotechnology, microfluidics, and/or data science, as our lab extensively works on integrating these domains to develop innovative tools. 2. Demonstrated skills in theoretical, experimental, and computational techniques are highly beneficial. 3. Ability to work in an international and interdisciplinary research environment with a cooperative mindset is crucial. 4. Applicants should be ready to engage actively in discovering unknown phenomena, elucidating mechanisms, and exploring new applications in science, industry, and medicine. **2) Required major field(s) of study** 1. We encourage applications from candidates majoring in fields related to, but not limited to, physics, chemistry, biology, data science, materials science, electrical engineering, mechanical engineering, chemical engineering, bioengineering, or a closely related field. 2. Given the interdisciplinary nature of our work, individuals from various scientific and engineering disciplines who possess a strong interest and background in the areas we focus on are welcome to apply. **3) Academic background or research project experience to be considered during selection** 1. Applicants should have a strong academic record with coursework or research experience that aligns with the areas of molecular imaging, spectroscopy, photonics, nanotechnology, microfluidics, and data science. 2. Experience in working on projects or research that involves theoretical, experimental, and computational techniques to solve critical problems is highly desirable. 3. Participation in projects that demonstrate the ability to discover, elucidate, and explore in science, industry, and medicine is an added advantage. **4) Selection and evaluation criteria (if any)** 1. Academic Excellence: Strong GPA and coursework in relevant fields. 2. Research Experience: Prior involvement in projects or research in areas like molecular imaging, spectroscopy, photonics, nanotechnology, microfluidics, and data science. 3. Technical Skills: Proficiency in theoretical, experimental, and computational techniques related to our lab’s focus. 4. Interpersonal Skills: Ability to thrive in an international, interdisciplinary research environment with strong communication and collaboration skills. 5. Alignment with Lab’s Mission: Demonstrated interest and commitment to developing technologies that enable discovery and exploration in science, industry, and medicine. 6. Leadership Potential: Evidence of potential to become a future global leader in academia, industry, or entrepreneurship.