ESEP-G 2021 List of Host Laboratories (June 7 - July 16)

No.	Department	Host Professor	Research Topic & Research Description	Special academic conditions required for research				Campus	Lab website	Online
				1) Prerequisite knowledge and/or special skills and level of proficiency	2) Required academic background	3) Academic or research project experiences beneficial during selection process	4) Other conditions			
1	Civil Engineering	Prof. KOSEKI Junichi / Associate Prof. WATANABE Kenji	Experimental study on mechanical behavior of geomaterials	Basic knowledge on soil mechanics and geotechnical engineering	Specialization in the field of civil engineering		Undergraduate student Graduate student	Hongo	http://geotle.t.u-tokyo.ac.jp/research/	×
2	Civil Engineering	Associate Prof. SU Di	Bridge Engineering, Structural Dynamics	Structural mechanics and dynamics, basic programming knowledge	Civil Engineering		Undergraduate student Graduate student	Hongo	http://bridge.t.u-tokyo.ac.jp/index_e.html	×
3	Mechanical Engineering	Prof. MITSUISHI Mamoru / Associate Prof. HARADA Kanako	Microsurgical robots: participant(s) will join one of our projects and study surgical robotic design, control, or simulation. The detail will be decided considering the preference, experinece and ability of each participant.	Programming	Mechanical Engineering or Computer Science	Robotics Image processing	Graduate student	Hongo	http://www.nml.t.u-tokyo.ac.jp/	×
4	Mechanical Engineering	Prof. SHIOMI Junichiro	Thermal energy engineering: Computational design or experimental improvement of thermoelectric materials or devices	Basic skills in programming or heat transfer experiments.	Mechanical Engineering, Physics, Materials Engineering, or Electrical Engineering	Any problem solving experience using computation or measurements	Undergraduate student Graduate student	Hongo	http://www.phonon.t.u-tokyo.ac.jp/?lang=en	×
5	Precision Engineering	Prof. KUNIEDA Masanori	Study on electrochemical machining and electrical discharge machining	Anyones who are interested in material processing technologies are welcome.	Anyones who are interested in micromachining, materials processing technologies, manufacturing, production engineering, etc. are welcome.	Both electrochemical machining and electrical discharge machining involve multi-physics phnomena. Any students who have fundamental knowledge about physics, mechanical engineering, materials, electrochemistry, and electrical engineering, etc. are welcome.	Undergraduate student Graduate student	Hongo	http://www.edm.t.u-tokyo.ac.jp/wpKunieda/	×
6	Systems Innovation	Prof. TAKAHASHI Jun	Advanced Composite Material Technology for Future Society - CFRTP for the Future Transportation Society - Innovative Simulation Technology for New Services - Hybrid Materials for Improving Social Resilience	Mechanics of materials Strength of materials	Mechanics of materials Strength of materials	Composite material Carbon fiber reinforced plastics	Undergraduate student Graduate student	Hongo	http://j-t.o.oo7.jp/index-e.html	○
7	Systems Innovation	Prof. KOSHIZUKA Seiichi	Trainees will participate in the research activities in the ongoing projects in Koshizuka- Shibata Laboratory. The projects are of computer simulation and computer graphics using particle methods: for example, fluid dynamics, solid dynamics, flow in a mixing tank, rain water infiltration in a car, flooding, tsunami, etc.	Experience of computer programming using C or other languages. Knowledge of basics of fluid dynamics.			Undergraduate student Graduate student	Hongo	http://mps.q.t.u-tokyo.ac.jp/lab/	○

8	Systems Innovation	Associate Prof. KANNO Taro	1) Simulation or experimental study on team cooperation (e.g. exploring communication strategies for resilient teamwork; team behavioral tracking; multimodal data analysis) 2) Simulation of business continuity and recovery for hospital BCP design. 3) Others (if requested, related to human-centered systems design and operation).	Intermediate JAVA programming skill for simulation studies	Industrial Engineering, Human Factors, Cognitive Systems Engineering, Resilience Engineering	None	Undergraduate student Graduate student	Hongo	http://www.tkanno.net/	×
9	Aeronautics and Astronautics	Prof. IMAMURA Taro	The participant will use Computational Fluid Dynamics simulation software (UTCart) developed in our lab in order to simulate the aerodynamic performance of various components on an aircraft.	1. Fluid dynamics (Compressible flow if possible) 2. Basic theory of numerical simulation (finite difference, finite volume etc.) 3. Simple coding using python 4. Computer skill (Windows, Office, etc.)	Aerodynamics, Aeroacoustics, Aeronautics	Basic course on Computational Fluid Dynamics. Development of model RC airplane.	Undergraduate student Graduate student	Hongo	http://park.itc.u-tokyo.ac.jp/rinoielab/english/index.html	×
10	Electrical Engineering & Information Systems	Prof. NAKANO Yoshiaki	Semiconductor optoelectronic materials, devices, and circuits Description: Compound semiconductor material and device technologies for semiconductor lasers, optical modulators/switches, photonic integrated circuits, high efficiency solar cells, and solar fuels are studied.	None	Basic study on optics and semiconductor physics.	None	Undergraduate student Graduate student	Hongo / Komaba	http://www.ee.t.u-tokyo.ac.jp/~nakano/lab/e_index.html	×
11	Materials Engineering	Prof. WATANABE Satoshi	Development of interatomic potentials for molecular dynamics simulations via machine-learning: This project aims at establishing methodology to construct interatomic potentials for molecular dynamics (MD simulations using neural network. Examples of specific tasks are improvement of algorithm, improvement of training data sampling, training of neural network potential (including its performance test), and obtaining training data.	None	Basic knowledge on solid state physics or materials science. Specifically, on atom dynamics in solids.	Molecular dynamics simulation; Python programming; machine learning; numerial analysis	Undergraduate student Graduate student	Hongo	http://cello.t.u-tokyo.ac.jp/index.php?id=7	○
12	Chemical System Engineering	Prof. TAKANABE Kazuhiro	Electrocatalysis for energy conversion Investigation on developing electrocatalyst materials will be conducted. The works involve practical experiments in laboratory, related to materials synthesis, characterization, and catalytic testings.	Basic knowledge in the field of chemistry, chemical engineering, and/or materials science. Safetry training is required before entering the lab. The chemical lab skill and knowledge is preferred.	Chemistry; Chemical Engineering; Materials Science.	Fundamental knowledge of chemistry, chemical engineering, and materials science.	Undergraduate student Graduate student	Hongo	https://www.catec.t.u-tokyo.ac.jp/	×
13	Bioengineering	Lecturer NAKAGAWA Keiichi	1) Ultrafast imaging: we will build an optical system and perform imaging of ultrafast plasma dynamics in laser processing. 2) Biophotonics: we will develop a new photoacoustic method to guide visible light into deep brain site. 3) Mechanobiology: we will conduct the biological experiment to understand acoustic interaction with cells.	None	None	Optical engineering, and Physics (for topic 1), Brain Science (for topic 2), Cell Biology (for topic 3)	Undergraduate student Graduate student	Hongo	http://www.bmpe.t.u-tokyo.ac.jp/en/index.html https://sites.google.com/site/keinakagawa6	×
14	Nuclear Engineering and Management	Prof. ABE Hiroyuki	We deal with development of nuclear materials and fuels, and fusion materials, such as iron-based and Zr-based alloys. Especially, with those structural materials and their degradation under environments such as irradiation, corrosion, and hydrogenation. The location of our lab is in Tokai campus. Students will enter in the Department of Nuclear Engineering and Management in Hongo campus (Tokyo), and research activity is in Tokai.	materials science and engineering	materials science and engineering		Undergraduate student Graduate student Two times experiments are scheduled in Tokai (Ibaraki). The accommodation fee (about 4,000 yen) in Tokai should be paid from the stipend.	Hongo/ Tokai	http://www.tokai.t.u-tokyo.ac.jp/index.html	×