

ESEP-INDIA 2022 List of Host Laboratories (May 16 - July 15, 2022)

No	Department	Title	Host Professor	Research Topic & Research Description	Special academic conditions required for research			Online	Campus	Lab website
					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			
1	Civil Engineering	Associate Professor	SU Di	Bridge Engineering, Structural Dynamics	Structural mechanics and dynamics, basic programming knowledge	Civil Engineering		NO	Hongo	http://bridge.t.u-tokyo.ac.jp/index_e.html
2	Mechanical Engineering	Lecturer	MOUTERDE Timothée	Condensation droplets merging on a superhydrophobic surface can jump from the surface due to the conversion of surface energy into kinetic energy. The student will perform experiments with microscope and high-speed camera to understand this jumping process in various experimental conditions. Another possibility is for the student to develop image analysis algorithm for automatic quantification of condensation properties.	Knowledge in fluid dynamics or software development/image analysis	Physics, fluids mechanics, or image analysis (AI based or not)	Experience in experimental physics or image analysis development are not required but would be beneficial.	NO	Hongo	https://mouterde-lab.com/
3	Mechanical Engineering	Professor	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	NO	Hongo	http://www.nml.t.u-tokyo.ac.jp/
4	Precision Engineering	Professor	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.	Electro chemical and physical machining processes involve multi-physics phenomena. Any students who have fundamental knowledge about physics, mechanical engineering, materials, electrochemistry, and electrical engineering, etc. are welcome.	NO	Hongo	http://www.edm.t.u-tokyo.ac.jp/wpKunieda/
5	Systems Innovation	Professor	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	Available	Hongo	http://j-t.o.oo7.jp/index-e.html
6	Electrical Engineering & Information Systems	Professor	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.		Basic study on optics and semiconductor physics.		NO	Hongo / Komaba	http://www.ee.t.u-tokyo.ac.jp/~nakano/lab/e_index.html

7	Materials Engineering	Professor	WATANABE Satoshi	Molecular dynamics simulations using interatomic potentials constructed via machine-learning: This project aims at understanding atomic processes such as diffusion and crystallization by molecular dynamics simulations with interatomic potentials constructed via machine-learning (specifically, neural network). Specific tasks may include assesment and improvement of interatomic potentials, and analysis of simulation results using advanced methodology such as persistent homology.		Basic knowledge on solid state physics or materials science. Specifically, on atom dynamics in solids.	Molecular dynamics simulation; Python programming; machine learning; numeral analysis	Available	Hongo	http://cello.t.u-tokyo.ac.jp/index.php?id=7
8	Materials Engineering	Associate Professor	MATSUURA Hiroyuki	1) Physical chemistry of non-metallic particle formation during solidification of steel: Experimental research to elucidate the precipitation mechanism of compounds and behavior of dissolved impurities in molten iron 2) Development of novel pyrometallurgical process for zinc: Electrochemical approach for purification of molten ZnCl ₂	Interest and basic knowledge for pyrometallurgy Interest for conducting lab-scale experiments	Interest and fundamental knowledge for chemical thermodynamics and electrochemistry	Better for having experiences of chemical analyses and use of SEM (not mandatory)	NO	Hongo	http://cello.t.u-tokyo.ac.jp/index.php?id=7
9	Chemical System Engineering	Professor	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. Safety 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.	NO	Hongo	https://www.catec.t.u-tokyo.ac.jp/

Available = Labs offering online courses