Division of Environmental Studies
Department of Socio-Cultural Environmental Studies

Laboratory	Faculty	Introduction of research activities and laboratory	Key words	Projects or activities summer program students can participate
Jun SASAKI (Estuarine & Coastal Environment) Laboratory	Prof. Jun SASAKI	We are involved in estuarine and coastal environmental studies in the field of civil and coastal engineering, such as (1) numerical modeling of physical and biogeochemical processes, (2) environmental restoration in enclosed coastal waters, (3) disaster mitigation, (4) mitigation of and adaptation to climate change, and (5) sustainability of community and livelihood in coastal areas in developing countries. Tokyo Bay, at short distance from our campus, is one of our main fields for studying environmental restoration and disaster mitigation based on field observation and development and application of numerical models. The bay has suffered from decline in fishery and water quality, including hypoxia and anoxia, for long time. We have been considering strategies for environmental restoration, rehabilitation and mitigation in the bay supported by scientific evidence. Disaster mitigation against storm surges and tsunamis is also our research targets, including development and application of prediction systems for coastal hazards using open source numerical models. Studies on coastal zone management for sustainability in developing countries, especially in mangrove coastal areas influenced by climate change and associated sea level rise, are also our main focus.	Coastal engineering; numerical simulation; data science; estuarine and coastal environment; water quality and ecosystems	Students will firstly learn physical and biogeochemical processes in estuarine and coastal waters, which may include some of coastal circulation, water quality, ecosystems, and sediment quality. Secondly students will choose one of the related problems, learn its mechanism and consider measures for resolving the problem by applying, e.g., a numerical model or data analysis. Students will also learn some of the basics of computer literacy, e.g., pre-processes and post-processes for numerical computation using, e.g., Python based tools. Students may select one of the open source models coded in Fortran, including FVCOM (unstructured-grid Finite Volume Community Ocean Model), GOTM (1-D water column model), and TEEM (coastal circulation, water quality and sediment quality model), or Python based data science tools for statistical data analysis. Students will create charts for showing results and interpret and discuss them. Students will be requested to present their outcomes at our laboratory's progress report seminar. We welcome students who are interested in estuarine and coastal environmental studies using numerical computation.