

Cross-cultural Engineering Project (Innovation creation)

| Date | Place | Partner Organization | Students' Major and Grade | Participants' Information | SIT Instructor |
|---------------------------|----------|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2024/07/08 ~2024/07/16 | Portugal | Universidade do Minho King Mongkut's University of Technology Thonburi | •Systems Engineering and Science, Department of Electronic Information Systems, Department of Machinery and Control Systems, Department of Planning, Architecture and Environmental Systems •Undergraduate 4th grade, Master 1st grade | (SIT) Students 23, Student Staff 4, Professor 2 (Universidade do Minho) Students 8, Student Staff 3, Professor 4, Staff 2 (King Mongkut's University of Technology Thonburi) Students 4, Professor 1 (Nova University Lisbon) Student Staff 1 | HASEGAWA Hiroshi(Department of Machinery and Control Systems), ICHIKAWA Manabu(Department of Architecture and Environment Systems) |



Image1 Group photo at Uminho

The College of Systems Engineering and Science and the Systems Engineering and Science of the Graduate School have implemented the Systems Thinking in Engineering (Systems Engineering) educational program as a core course for undergraduate and graduate majors. The culmination of this educational program is the Cross-cultural Engineering Project (CEP), which is implemented in Japan, Southeast Asia, and Europe. The Japan region is held at the Omiya Campus of SIT, where participants from various countries and fields deal with issues related to industry-academia-region collaboration. The Southeast Asia region is held in Bangkok, Thailand, and targets global issues. The European region will be held in Portugal, and will focus on innovation creation. Participants can earn credits by taking courses in any of these three regions. CEP@UMinho was held at Universidade do Minho in Guimarães, Portugal from July 8 to 16. The number of participants was 33 students from Portugal, Thailand and Japan, in 5 groups. CEP@UMinho is a PBL on the issue of innovation creation, and value creation was conducted based on the thinking process of Creative and inventive Design Support System (CDSS) for DX. First, in the Problem-Understanding process, Empathy Map by Public Narrative (Story of self & us) and Inspiring stories by scenario graph were derived as Strategy Responses Objectives, needs, and solutions were organized and analyzed using the QFD matrix (quality requirements and solutions). In the Problem-Solving process, top-down thinking by particle method, contradiction resolution by TRIZ, and bottom-up thinking using UML were applied to derive a solution to the problem from the QFD matrix. The problem solutions were reviewed to Design Review (DR) by professors from UMinho, KMUTT, and SIT, using A3 materials. Based on the results of the DR, the proposal was redefined and revised, business models were created, and a final presentation was performed. In the final presentation, a Q&A session was held with the participants of company person as well as professors. As a result, the 1st place project, "Improved accessibility to medical and welfare," was awarded to the free theme group, and the 2nd place project, "Team1", a project of one of the company, achieved excellent results.



Image2 Opening at CEP@Uminho



Image3 Project Work



Image4 1st place project team



Image5 2nd place project team



Image6 Group photo at Braga



Image7 Certificate