**MARMARA UNIVERSITY**

**FACULTY OF ENGINEERING**

**ENVIRONMENTAL ENGINEERING DEPARTMENT**

**ENVE 4197/4198 ENGINEERING PROJECT**

**PROPOSAL FORM**

**FALL 2024-2025**

|  |
| --- |
| **Instructor :** Assoc. Prof. Sedat YALÇINKAYA  **Project Title :** Heat risk index of Uskudar District  **Proposal No. :**  **Number of Students :** (Max 4 students) 3  **Requirements (from students) :** Fundamental GIS knowledge, or registration to ENVE4094 GIS in Water Resources. Students reside in Uskudar are **preferred.** |
| **Scope of the Project :**  Extreme heat is the climate-related hazard that people around the world are experiencing most. Not only are temperatures rising, but the number of hot days is also increasing. We are seeing progressively more heat waves across the globe and observing the effects of these heat waves on our cities, ecosystems, and food production.  As a result of climate change, urban heat islands (UHIs) are becoming more prevalent. In a UHI, the temperature of an urban area, like a city, is higher than that of the surrounding rural areas. Structures like buildings and roads absorb and re-emit the sun’s heat more than natural landscapes like forests and water bodies do. Because urban areas have higher concentrations of these heat-trapping structures and forested areas are limited, pockets of heat can surround the urban areas, creating UHIs. Reducing the effects of climate change requires creating strategic and localized adaptation plans. The first step in developing a localized adaptation plan for extreme heat is creating a heat risk index.  With this project, it is aimed to determine the priority intervention areas in terms of urban heat island formation by examining the entire surface area of ​​Uskudar District. This project will also contribute to the “Action AK1-Heat Island Impact Reduction Planning Approach” action plan, within the scope of Uskudar Sustainable Energy and Climate Change Plan (2023-2030). |
| **Hardware/Software/Lab/Equipment Requirements :**  Laptop or desktop with simple hardware and software installed.  ArcGIS software. |
| **Development Plan :**   |  |  | | --- | --- | | **Work Step** | **Schedule (weeks)** | | Literature review & software setup | 1-8 | | Data acquisition | 9-14 | | Data pre-processing & developing the index criteria | 15-18 | | Creating the heat risk index | 19-22 | | Final assessment | 23-25 | | Report wring & Poster preparation | 25-28 | |