Thesis Title	**A Comprehensive Framework for Replacing Solar Thermal Systems**
Programme of Studies	MSc in Sustainable Energy Systems
Course	MES 580 MSc Thesis
Area of Study	Sustainable Energy Technologies – Solar Energy
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Short Description	Societies experience a significant shift towards the development of natural resources and the decarbonization of fossil fuels. Consequently, the focus of investments shifted towards renewable energy sources, leading to substantial growth in the energy sector for several decades. This paper discussed the utilization and calculation of renewable energy generated by solar water and space heating systems. Additionally, it assessed the benefits of upgrading existing solar systems to newer technology equipment. Initially, this study presented general guidelines for thermal solar systems, covering data collection, estimation of calculation parameters, and advancements in measurement methodologies specific to Cyprus. Next, the results were presented, demonstrating the performance of solar thermal systems in Cyprus households over the years and highlighting the rate of change in their efficiency. Lastly, an economic analysis was conducted based on the estimated contribution of solar thermal systems to Cyprus' energy balance, providing valuable insights into their overall impact on the country's energy landscape.