UNIVERSITY OF THESSALY
School of Engineering - Department of Civil Engineering

Series of Scientific Lectures
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Environmental informatics for modelling of freshwater ecosystems: dynamics and impacts of eutrophication and sustainable agricultural water use

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Wednesday **18/11/2020**, Time: **13:00**
Webinar: Participate using Microsoft Teams
Live Streaming: Select channel 3 on live.uth.gr

Abstract:

The potential of ecological modelling under the frame of environmental informatics to define the factors that affect water quality and quantity parameters on lake ecosystems, will be presented. Karla Reservoir, a Greek hypertrophic constructed lake, suffers from continuous water degradation because of excessive nutrients loading, unaccomplished works, and operational malfunctions. Ecological modelling is conducted to simulate in-lake nutrient dynamics and to reveal the factors affecting its trophic state, while several operational scenarios and a climatic one is applied to estimate the fate of the lake under these hypothetical circumstances. Moreover, cyanotoxins (microcystins) are being modelled through a current artificially intelligence algorithm (ANFIS). Next, cyanobacteria biomass and recreational health risk levels associated to cyanobacterial abundance are modelled on a network of Northern European lakes. Stepwise linear regression, a series of machine learning algorithms and Bayesian hierarchical modelling are applied to test their efficiency in producing reliable results. Lastly, an analysis in terms of which types of crops export the most virtual water through trade, in relation to the benefit in Greek economy, is conducted.