Industrial water and resource management
The pollution of the ground and surface waters may be linked to the industrial production of manufactured goods and wasting of residuals. Basic industries such as coal, power production, dairy, textile, cannery, tannery, and paper were the first to face pollution problems; later on, other industries developed such as inorganic followed by organic chemical plants exacerbating even more the problem. Conventional municipal wastewater treatment technologies were not effective, so the contaminants found their way into the environment with disastrous results. The recovery and reuse of resources or sale of waste products is still growing, and the era of waste utilization rather than waste treatment is slowly emerging. In this module, the waste generation (sources and quantities) to resource recovering following pollution prevention interventions is discussed, and the fundamentals of the key physical/chemical processes involved in modern industrial wastewater treatment plants is addressed leading to the design of a comprehensive industrial wastewater treatment process that aims at resource recovery (nutrients, biogas, value added chemicals, etc.). Case studies from specific industries worldwide are included.