



**The University of Jordan
School of Engineering
Department of Chemical Engineering**

Academic year /

Semester

Lecturer: later

0915552 Water Desalination (2024 study plan)

Introduction:

The chemical process of changing seawater into potable or fresh water is called desalination. Thermal distillation and *membrane* processes are the two main approaches used around the world to desalinate water. Desalination processes may be used in municipal, industrial, or commercial applications. With improvements in technology, desalination processes are becoming cost-competitive with other methods of producing usable water to respond to a growing demand. Stand-alone desalination plants can use renewable *energy* to operate. The pure water that is obtained after desalination must be re-mineralized to be adequate for human consumption. The concentrated brine produced in desalination processes needs to be disposed of properly.

Prerequisites: 0935442

Textbook and references:

- 1. Andrea Cipollina; Giorgio Micale; Lucio Rizzuti; Seawater Desalination: Conventional and Renewable Energy Processes. Springer-Verlag Berlin Heidelberg (2009).**
- 2. Jane Kucera; Desalination: Water from Water. Scrivener Publishing LLC (2014).**

The following topic will be covered:

Seawater Desalination for Freshwater Production
Conventional Thermal Processes (MSF, MED, MVC)
Membranes for Desalination (RO and NF)
Commercial Desalination Technologies
Nuclear Desalination
Solar Thermal Processes
Membrane Distillation
Photovoltaic Reverse Osmosis and Electrodialysis
Protecting the Marine Environment

Evaluation

30% Midterm Exam

20% Homework, projects, and innovation & ideas generation

50% Final exam

September 23, 2025