

Suggested research topics

Winter semester of the academic year 2019/2020

Course name in Arabic: هندسة الاستزراع المائي

Course name in English:- Aquacultural Engineering

Professor Dr.: Wael Mohamed Aly Elmessery

Level:- First

Department:- Aquaculture

No.	Research title	Research items
1	Water Supply Network	1-water supply importance 2-Pipe and open Channels 3-Pipe materials 4-Pipe Fitting and connections 5-Classification of pipes
2	Fluid Mechanics	1-Fluids Pressure 2-Fluid dynamics 3-Continuity equation 4-Bernoulli's equation 5-Energy Losses
3	Water flow and level Measurements	1-Pitot-Static Gauge or Tube 2-Venturi Tube 3-Weirs 4-Flow Sensors 5-Liquid Level Sensors
4	Hydraulic Pumps	1- Pumps and Pumping 2-Centrifugal Pumps 3-Axial flow pumps 4-Airlift Pumps 5-Pump Selection
5	Pond Systems	1-The ecosystem 2-Pond types 3-Physical characteristics of fish ponds 4-Dyke design and construction 5-Pond layout
6	Tank Systems	1-Aquaculture Engineers Considerations 2-Stocking density 3-Tank volume determination 4-Culture Tank Engineering 5-
7	Recirculation and Water Re-use Systems	1-Degree of re-use 2-Continuous Water Exchange 3-Water exchange in batches 4-Mass flow in the system 5-Components in a re-use system
8	Mechanical Filtration	1-The engineering term of mechanical filter 2-Head Loss Definition 3-Engineering Principle of the micro-screens filters 4-Mechanical Filter Blocking 5-Treatment of Blockage

Course Instructor:

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Signature:



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9	Depth Filtration	1-Depth Filtration Definition 2-Granular medium filters 3-Blocking of medium surface 4-Blocking reduction processes 5-Depth filters classification 6-Back-Flushing of Depth Filter
10	Rotary Screen Construction	1- Axial rotating screen 2- Radial rotating screen 3- Rotating Belt 4- Back-flushing process 5- Micro-screen filter Automation 6- Engineering Parameters for Filter Selection
11	Settling Filtration	1-Particle Sinking Velocity 2-Settling basin difficulties 3-Swirl separators, hydrocyclones 4-Ground filtration 5- Constructed wetland 6- Purification Efficiency
12	Sludge Production and Utilization	1- Sludge collection 2- Sludge (Biosolids) Storage 3- Sludge Stabilization methods 4- Sludge Composting and Fermentation 5- Local Ecological Solutions

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