



ADVANCED AQUACULTURE TECHNOLOGY

PROF. GOURAV DHAR BHOWMICK

Department of Agricultural and Food Engineering
IIT Kharagpur

PRE-REQUISITES : Basic Knowledge in Higher Secondary Mathematics, Biology, and Physics

INTENDED AUDIENCE : UG/PG Scholars of Agricultural and Food Engineering, Aquacultural/Fisheries Engineering or Science

INDUSTRY SUPPORT : Aquacultural farms and processing industries.

COURSE OUTLINE :

The course is dealt with technological advancement in the field of aquacultural engineering all over the globe. The science behind the conventional and advanced technologies in the aquacultural sector is discussed, along with the basic engineering details. The necessity of strict environmental considerations is also discussed, along with the economic return. The audience of the course is expected to be acquainted with the career opportunities in this field that align with the Neel Kranti Mission of the Government of India.

ABOUT INSTRUCTOR :

Prof. Gourav Dhar Bhowmick joined IIT Kharagpur, India, in 2021, where he is currently an Assistant Professor in the Aquacultural Engineering Specialization of the Agricultural and Food Engineering Department. He did his M.Tech. and Ph.D. from IIT Kharagpur, India, and then he went to Ben-Gurion University of the Negev, Israel, to do his Post-Doctoral research. He is a recipient of the prestigious GYTI award 2016. He has published 34 international peer-reviewed journal papers and presented his research to 12 International conferences. Dr. Gourav Dhar Bhowmick has expertise in developing bio-engineering interfaces for aquaculture in areas like engineering and design of aquacultural facilities, commissioning, operation, materials selection, and their uses in recirculatory aquaculture systems. He is now investigating the smart aquaponics systems for urban farming. Other than that, Dr. Bhowmick is also working on the end-of pipe treatment of marine and freshwater aquaculture systems, focusing on pollutant removal and biogas production in line with residual resources engineering for environmental remediation.

COURSE PLAN :

Week 1: Introduction to Aquaculture; Water quality criteria for aquaculture

Week 2: Water treatment methods for aquaculture systems

Week 3: Recirculatory aquaculture systems

Week 4: Offshore farming

Week 5: Smart aquaponics system

Week 6: Bio-electrochemical systems for treating aquacultural wastewater

Week 7: Advanced farming practices for crustaceans

Week 8: Pearl culture

Week 9: Artificial reefs; Sea ranching

Week 10: Integrated multi-trophic aquaculture

Week 11: Algaculture - microalgae, and macroalgae or seaweed

Week 12: Environmental considerations in aquaculture; Future of aquaculture industries