

## **DISTANCE LEARNING COURSE: USING MODELLING OF SCALE EFFECTS AS A TOOL FOR EXPERIMENTAL DESIGN**

**DATE:** AVAILABLE FROM 30 JAN 2019    **LOCATION:** ONLINE

**FREE  
TRAINING COURSE**



### **COURSE DESCRIPTION**

This course will train researchers in the use of numerical models as efficient tools for designing experiments and gaining a better understanding of the interaction between biological and physical factors within aquaculture research, including growth, nutrition, waste production, water quality, water treatment and hydrodynamic flow fields.

Participants will gain an understanding of the theoretical background for the numerical models used and an understanding of the practical use of the models in aquaculture research.

### **COURSE CONTENT**

#### **MODULE 1: UNDERSTAND SCALING EFFECTS**

- **Recorded lectures** of experts explaining the relevant concepts of scaling in broad terms
- **Literature** for in-depth understanding

#### **MODULE 2: UNDERSTAND MATHEMATICAL MODELLING AS A TOOL**

- **Recorded lectures** of experts describing general aspects of modelling and relevant models
- **Literature** on the different models for background information
- **Recorded lecture (more comprehensive)** on the modelling studies of scaling conducted in AQUAEXCEL<sup>2020</sup>

#### **MODULE 3: USING SIMPLIFIED VIRTUAL SCALING EXPERIMENTS FOR EXPERIMENTAL DESIGN**

- **Online video** describing how to get started with and using the virtual laboratory portal
- **Two practical exercises** - virtual scaling studies using fish, and scaling studies using water treatment/biofilters:
  - ✓ Calculate proper parameters for different scales (so that only physical scale is changed)
  - ✓ Practical exercise in running virtual scaling study using relevant models
  - ✓ Evaluate outputs to investigate any scaling effects and arrive at final experimental design

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### **TARGET AUDIENCE**

Primarily aquaculture researchers, but may also be relevant for aquaculture industry stakeholders involved in research experiments examining the interaction between biological and physical factors in aquaculture production.

#### **Required competence level:**

- **Biology:** basic knowledge of aquaculture biological processes
- **Modelling:** some prior knowledge on modelling and the use of models is recommended

### **COURSE TUTORS**



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In addition to the course tutors, experts from other **AQUAEXCEL<sup>2020</sup>** partner institutes will also be involved across specific course topics, in particular partners from: Norges Teknisk-Naturvitenskapelige Universitet (NTNU) (Norway), Hellenic Centre for Marine Research (HCMR) (Greece), Jihočeská univerzita v Českých Budějovicích (JU) (Czech Republic), Nofima (Norway) and Wageningen University (WU) (Netherlands)

### **PRACTICAL INFORMATION:**

**Location:** Online Course. Full details on access will be provided after registration.

**Format:** Two lecture series of about 1h and 1.5h respectively, in video format (previously recorded). Associated material such as literature and practical exercises will be provided.

**Date & Time:** The course will be available online from 30 January 2019 until September 2020. From 30 to 31 January 2019 the course teachers and experts will be online and available for direct interaction and immediate troubleshooting. From 1st February 2019, the teachers can be approached by email in case of questions.

**Language of instruction & material:** English

**Fees:** Course registration and attendance is free, thanks to European Commission Horizon 2020 funding. There are no further fees.

### **REGISTRATION:**

E-mail your registration request to [aquaexcel@aquatt.ie](mailto:aquaexcel@aquatt.ie), using the official registration form that can be downloaded from the **AQUAEXCEL<sup>2020</sup>** website: <https://aquaexcel2020.eu/training-courses/aquaexcel2020-training-courses>.

Please indicate the following in the subject: AQUAEXCEL2020/DL training course SINTEF. A separate GDPR Consent Form is also provided on the project website. The GDPR Consent Form must be completed by individuals applying for any **AQUAEXCEL<sup>2020</sup>** training course and should be attached to the training course registration.