
Training and Courses

1. Introduction

Although we have provided many worked design examples in the handbook, as well as a number of downloadable Excel spreadsheets to help you get started, mastering the design theory presented in the book still will not be an easy feat: and it will certainly take a lot of dedicated effort.

In the time-pressed environment of day-to-day work, with its many conflicting deadlines and demands, you will in general have little time to spare to really “dive” into this subject. Therefore, for many people the only way to do it will be within the framework of a dedicated course, where you will have nothing else on your mind.

Therefore, to help you speed up the learning process, we offer courses in several formats:

- Standard courses: advanced design courses I and II (5 and 4 days respectively)
- In-house company courses

2. Standard Courses

Standard courses will be given in the Netherlands (in or around The Hague), in groups of 8 to 20 persons. Currently two courses are available:

2.1 Advanced Design Course Part I

The main purpose of the five day advanced design course part I is to help you master the optimized wastewater treatment plant design procedure for the most commonly used nitrogen removal systems: i.e. pre-D and Bardenpho configurations. A method is presented which ensures optimized design for situations with or without complete nitrogen removal.

As a first step the basis of the activated sludge process will be explained: the steady state model for COD removal. The sludge age is introduced as the key parameter defining activated sludge system performance, including excess sludge production and oxygen demand. We will then focus on the design of the main units of the activated sludge system: aeration tank, final settler, sludge thickener, anaerobic digester and aeration equipment.

An important part of the training will deal with common problems experienced during the design process, e.g. dealing with uncertainties (e.g regarding peak loads and flows).

Among others the following subjects will be addressed (for a more detailed description refer to the attached PDF file “Course Schedule BWT”):

- Measuring organic material in wastewater
- Bacterial metabolism
- Setting up and closing mass balances over an activated sludge system
- Steady state model for COD removal
- Concepts in nitrogen removal
- Nitrification and denitrification
- Optimized design of nitrogen removal
- Final settler design - solids flux theory
- Sludge thickening
- Anaerobic digestion
- Sizing of aeration capacity
- Preparation of the basis of design
- Unit costing
- Integrated design of activated sludge systems

2.2 Advanced Design Course Part II

This four day course builds on the fundamentals from the first course. After a brief rehearsal of the concepts presented in part I, other main treatment processes will be covered, such as phosphorus removal (both biological and chemical) and the integration with anaerobic pre-treatment. More detail will be given to final settler design (using empirical methods) and -operation (static point analysis). Design and operation of MBR will be explored. Operation and -control of nitrogen removal systems will be discussed. A final subject is remediation of sludge separation problems caused by filamentous bacteria.

- Membrane Bio-Reactors
- Biological phosphorus removal
- Chemical phosphorus removal
- Anaerobic treatment of municipal and industrial wastewater
- Final settler design - empirical methods
- Final settler operational optimization - static point analysis
- Sludge drying beds
- Sludge separation problems

2.3 In-House Company Courses

If your company wants to train several people simultaneously, it might be advantageous to opt for in-house company courses. The teacher will then conduct the training at a location of your choice. Group size will be limited to 12 persons. Both the advanced design course part I and part II can be given, while to a certain extent the training can be adapted to suit your particular needs.

If you are interested, feel free to contact us at info@wastewaterhandbook.com to discuss your specific learning needs and /or to request a budget quotation.

3. Course format

This course will be given in intensive full-day sessions (from 8:30 to 17:30 hrs), in a mixture of presentation of theoretical concepts, design- and calculation examples and short- and longer exercises to work on: both in-class and as homework assignments.

The days will start with a summary of yesterdays main learning points and a discussion on the homework assignment(s), handed out the previous day. Part of the homework assignment will be a multiple choice test, which will be used to check whether the concepts presented have been successfully conveyed.

At the end of the course, the students will be provided with a practical design case, which will serve as an "examination". A spreadsheet for optimized design of nitrogen removal is supplied that can be used as a starting point. The students are expected to finalize the design case at home. They will receive feedback on their results and a spreadsheet containing the solution.

You will an attendance certificate of 80 hrs for Advanced Course Part I and 60 hrs for Advanced Course Part II, if you participate the whole course and hand in the multiple choice exams. Assuming you produce a "workable" solution to the design problem(s), you will get a graduation certificate as well.

We will supply you with a copy of the Handbook and detailed printed handouts of the presentations. For Advanced Design Course Part I, although not strictly required, we suggest you study in advance the following parts of the Handbook, which can be downloaded from the website: Chapter 2; Section 3.1 - 3.2 and Section 4.1 - 4.4

Please note that fluency in English is essential to make your attendance to the course worthwhile. Furthermore the attendees should have at least basic knowledge of wastewater treatment design and/or operation. The course will be given at BSc level or equivalent.

4. Course Data and Prices

4.1 Scheduled design course data

1. Advanced Design Course Part I:
 - October 08 to October 13, 2010
2. Advanced Design Course Part II:
 - October 15 to October 18, 2010

4.2 Course prices

The following prices apply in 2010:

1. Advanced Design Course Part I:
 - 5 days course: € 350 per day = € 1750 in total
2. Advanced Design Course Part II:
 - 4 days course: € 350 per day = € 1400 in total

If you apply for both courses, we will give you a discount of € 150: the price for Advanced course Part I and II will then be € 3000

Lunch, coffee etc. is included.

The course will be given in a hotel. Optionally overnight stays and a three course diner can be included in your course package. This will in general be cheaper than arranging accomodation yourself, and it saves you on transport costs from/to the course location. However, including the hotel in your package is optional. Depending on your travel distance we recommend you arrive the day **before** start of the course.

The hotel package includes:

- Single room, equipped with cable TV, private bathroom etc.
- Pay per view movie service (available, not included in price)
- Internet connection (WIFI, € 25 per week)
- Breakfast buffet
- Three course dinner including two consumptions
- Price of the hotel package is € 80 per day

4.3 In-house company course:

Our daily lecturing rate is € 850 per working / travel day. Working days are from 08:30 to 17:30. If the integration exercise is included, then reviewing the assignments will count as an additional working day.

Travel fees and all local expenses (hotel, transport, meals) are payable by the customer.

A maximum of 12 Handbooks (equal to the number of attendants) will be included, as well as PDF files of the handouts of the modules covered in the course.

4.4 Course booking and payment

Inquiries and/or bookings can be directed to info@wastewaterhandbook.com.

Please send us the following data in your booking:

1. Personal and/or company data:

- Company name (if applicable)
- Last name + first name
- Address, state, country
- Postal code (zip code)
- Email address

2. Booking data:

- Which course (advanced design course part I or part II)
- Preferred course dates
- Number of persons attending
- Do you want to include the hotel package, and if so, how many days ?

After receipt of your booking, you will receive a confirmation per e-mail. Upon verification of the data in the booking confirmation, you will receive a first invoice requesting a (non-refundable) downpayment of € 500, payable within 14 days from invoice date. You will receive a second invoice for the open amount, due no later than 45 days prior to start of the course. We will then send you detailed information concerning course location, agenda et cetera.

Minimum course attendance is 8 persons, maximum is 20 persons. In the event of cancellation on our behalf, because of insufficient attendants, we will refund your money.