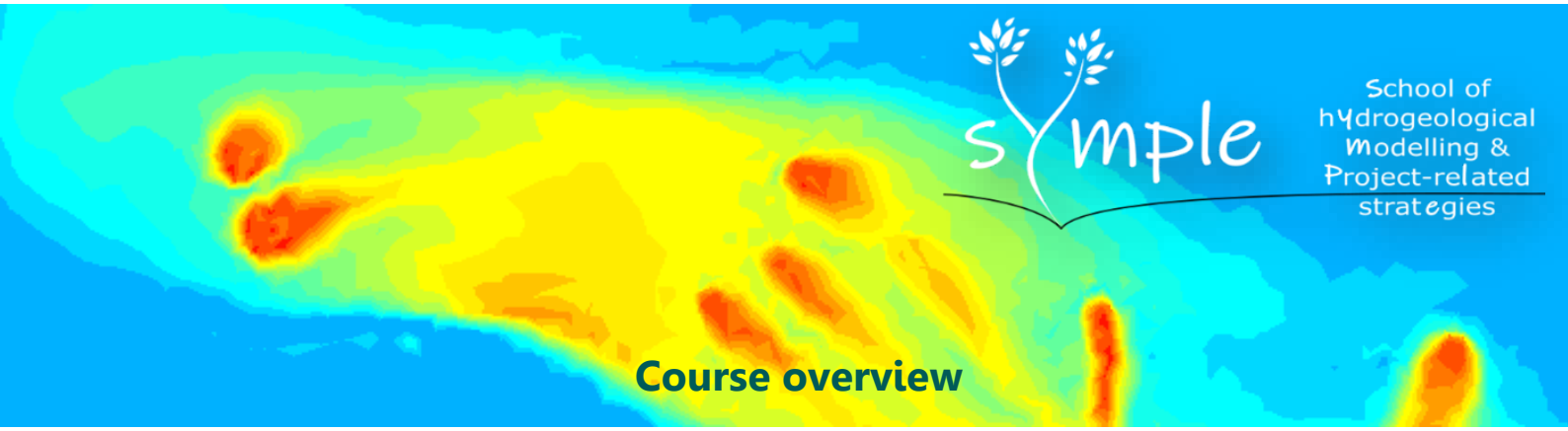
UNDER THE AUSPICE OF iah aih Italian Chapter

Ente di Formazione Consiglio Nazionale Geologi Accreditato

Blended Course 2026

INTRODUCTION TO APPLIED GROUNDWATER TRANSPORT MODELING

October 5th – November 25th, 2026 (online + onsite)



Course overview

The training course *Introduction to Applied Groundwater Transport Modeling* will take place at the SYMPLE school in Vetralla, Italy, with the option of participating online. The course is divided into three parts: the first is theoretical and entirely conducted online, the second part is a blend of online and on-site attendance, emphasizing practical applications of flow and transport models. A final session, focused on a TCE remediation project, will commence on-site and continue online later on.

The course will cover essential practical criteria necessary for constructing analytical and numerical models. This includes topics like understanding the advection-dispersion equation, defining transport parameters, and selecting the appropriate solver, all illustrated through case studies. Practical applications using MT3DMS, MT3D-USGS and the variable density code SEAWAT will be demonstrated through explanatory lectures and computer exercises facilitated by the proprietary GUI Groundwater Vistas 8.

Each participant will have access to Groundwater Vistas for a duration of 2 months. To ensure accessibility and flexibility, all course sessions, whether conducted online or on-site, will be recorded. These recordings will be uploaded to our e-learning platform, allowing participants to review the material at their convenience.

Info & Registration

What is included

- Access to live lessons (both in the on-site classroom and remotely)
- Software and installation instructions provided before the course
- Material to carry out the exercises
- Access to our e-learning platform to watch again the recorded lessons
- *APC credits* for Italian Geologists
- Coffee breaks and light lunches

Remote/Live Attendance

The course can be attended remotely or on site. The venue is located in Vetralla (VT), Italy (60 km from Rome).

Costs

SYMPLE is an Accredited Training Organization, VAT is not due (art. 10 DPR 633/72).

- **Regular: 900 €**
- **IAH/SGI: 800 €**
- **Students/ECHN: 550 €**
- **20% discount for SYMPLE Members**
- Free access for the attendees of the 2026 ed. of the SYMPLE School
- Installments available

Registration

Seats are limited to 15 participants

Register preferably before September 4, 2026

website @info@hydrosymple.com telegram +39.0761.481622 LinkedIn

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Preliminary Programme

October 5 (on-line)
Session 1 and 2 – 4h

* Preliminary checks of computer setup
* Course Introduction and Overview
* Basics of Contaminant Transport Modeling
  * Advection
  * Dispersion
  * Chemical reactions
  * Governing equation and analytical solutions

October 6 (on-line)
Session 3 and 4 – 4h

* Building a numerical contaminant transport model
* Evaluation of transport parameters
* Risk assessment with introductory case studies
  * Special Topic: advective transport with case studies
  * Special Topic: dual domain transport with case study

October 7 (on-line)
Session 5 and 6 – 2h

* Modeling natural attenuation with case study
* Some considerations on calibration of a transport model

October 13 (blended)
9 am - 1 pm / 2 pm - 6 pm CET

* **Lesson**: Recapitulation of Basics of Transport Modeling
* **Lab 1**
  - Analytical solutions with ATRANS: Interactive spreadsheet
* **Lesson**: MT3DMS packages
* **Lesson**: Eulerian vs Lagrangian solvers
* **Lab 2**
  - Interactive demonstration of GWV: choice of solvers with simple MT3DMS model
* **Lab 3**
  - Introduction of MT3DMS - Risk Assessment

October 14 (blended)
9 am - 1 pm / 2 pm - 6 pm CET

* **Lesson**: Discussion of Source Behavior and Plume Moments
* **Lab 4**
  - Application of MT3DMS: Remedial Design
* **Lesson**: Introduction to advanced options in MT3D-USGS
* **Lab 5**
  - Nitrate (non-point source) model with MT3D-USGS
* **Lab 6**
  - Benzene (point source) model with MT3D-USGS

October 15 (blended)
9 am - 1 pm / 2 pm - 6 pm CET

* Case Study with MODFLOW-NWT and MT3D-USGS: full flow and transport
* **Lesson**: Variable Density, Saltwater Intrusion, and SEAWAT
* **Lab 7**
  - Conversion of MODFLOW/MT3DMS model to SEAWAT model
* **Lab 8**
  - Construction, calibration, and application of a SEAWAT model to saltwater intrusion
* Special topic: Geothermal/Heat transport applications with SEAWAT and MT3D-USGS

October 16 (blended)
9 am - 3 pm

* **Homework and discussion**
  - Project (to be continued independently): TCE plume, risk assessment, and remedial design
  - Discussion of student projects

"Intensive" courses can be a bit overwhelming, especially for those diving into numerical modeling for the first time. We propose a **follow-up**: on the final day of the course, an independent exercise is assigned, challenging participants to apply the acquired concepts and techniques autonomously.
This post-course activity allows participants to revisit recorded sessions and seek assistance from us on **November 25th, Online**. It is an effective way to see where you stand and figure out which parts are giving you trouble. **The final session of the course is scheduled about a month after the labs, to give time to assimilate the course material.**

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Trainers

Daniel Feinstein has worked in the field of quantitative hydrogeology for over 40 years. He studied ground-water modeling at the at the University of Wisconsin-Madison before working as a consultant on remediation projects for Papadopulos & Associates and Geraghty & Miller. In 1997 he joined the USGS where he specialized in interpretive studies involving regional ground-water modeling, simulation of groundwater/surface-water interactions, and simulation of transport of natural contaminants. Mr. Feinstein is an adjunct professor at the Geosciences Department of the University of Wisconsin-Milwaukee.

Francesca Lotti, PhD, is a consultant hydrogeologist and Vice-President of Kataclima srl Società Benefit. In 2021 she started SYMPLE, School of Hydrogeological Modelling. She has 20 years of experience in field investigations and numerical modeling with MODFLOW and FEFLOW of contaminated sites, mines, geothermal plants, coastal aquifers, dewatering projects and more. From 2001 to 2014 she carried out research at the University of Tuscia; from 2008 to 2025 she was a professor at the University of Camerino, where she has followed numerous MSc and PhD theses students.

sYmple School of hYdrogeological Modelling & Project-related strategies

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