UNDER THE AUSPICE OF

Italian Chapter

Blended Course 2026

Introduction to Applied Groundwater Flow modelling

with

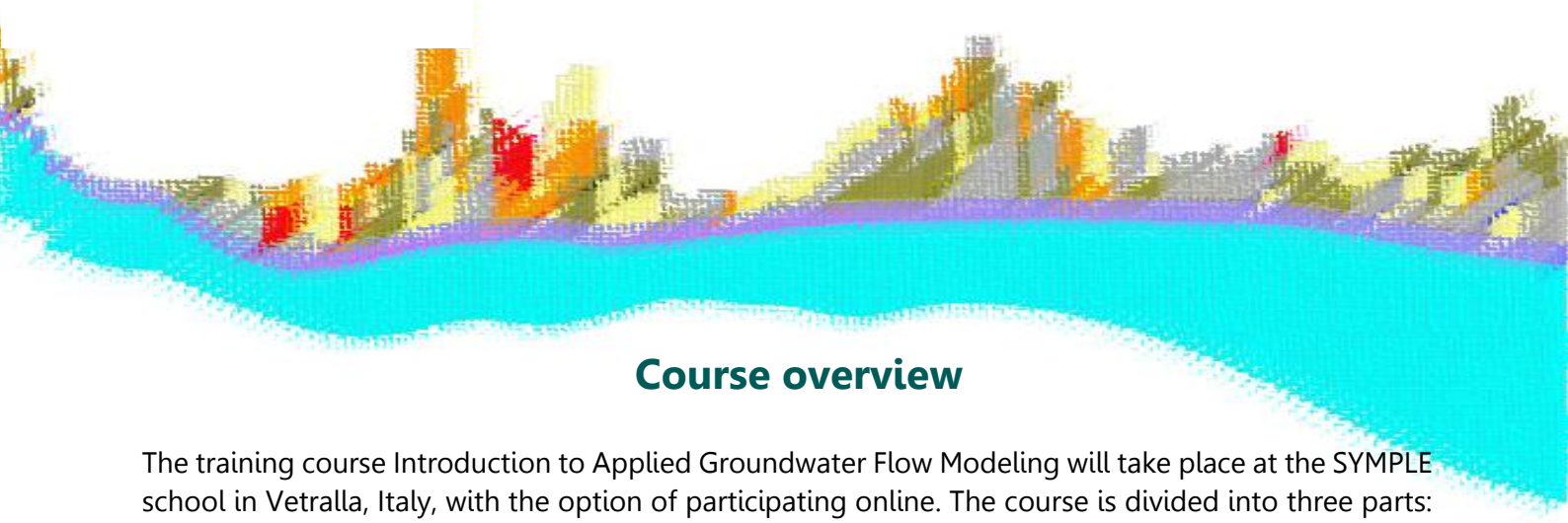
GW Vistas

Ente di Formazione

Consiglio Nazionale Geologi

Accreditato

March 12th – April 24th, 2026



Course overview

The training course Introduction to Applied Groundwater Flow 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 MODFLOW models. A final session, focused on a pumping test analysis and a dewatering project, will commence on-site and continue online later on.

The course will cover essential practical criteria necessary for constructing a numerical flow model. This includes topics like defining parameters, boundary conditions and inputs, both in stationary and transient conditions. Practical applications using MODFLOW packages 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

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: 700 €
- Students/ECHN: 450 €
- Free access for the attendees of the 2026 ed. of the SYMPLE School
- Installments available

Registration Form

Seats are limited to 20 participants

Register preferably before 27.02.2026

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Preliminary Programme

March 12 and 13 (on-line)
Session 1 and 2 – each 4h

* **Preliminary checks of computer setup**
* **Introduction to Course**
  a) Objectives and Overview
  b) History of MODFLOW
  c) Review of quantitative hydrogeology
* **Elements of Flow Modeling**, intro.
  a) Governing equation and finite difference
  b) Input parameters
  c) Boundary conditions
  d) Grid design

March 19 and 20 (on-line)
Session 3 and 4 – each 4h

* **Elements of Flow Modeling,** cont.
  e) Steady-state and transient conditions
  f) Overview of Calibration and Uncertainty
  g) Example USGS MODFLOW model
  h) Parameter Assignment, More on Source/Sinks
* **Basic flow modeling with MODFLOW:** specific input packages and solvers

April 21 (blended)
9 am - 1 pm / 2 pm - 6 pm CET

* **Lab 1**
  - Introduction to Groundwater Vistas Interface
  - Basic MODFLOW model construction – grid design, boundary conditions, and properties
* **Lab 2**
  - Basic MODFLOW model construction – from 2D to 3D and steady state to transient
  - Class demonstration of finite difference method

April 22 (blended)
9 am - 1 pm / 2 pm - 6 pm CET

* **Lab 3**
  - Particle Tracking with MODPATH
* **Lab 4 and Lab 5**
  - Groundwater/Surface Water Interactions using Advanced Packages (STR, LAK, SFR2)
* **Lab 6**
  - Simulation of Multi-Node wells with MNW/MNW2

April 23 (blended)
9 am - 1 pm / 2:30 pm - 6:30 pm CET

* **Lab 7**
  - Robust NWT solver for MODFLOW
* **Lab 8**
  - Analysis of Water Budgets and simulating Sources of Water to Wells
* **Lab 9**
  - Manual approaches to Sensitivity Analysis and Calibration // Discussion of PEST
* **Lab 10**
  - Lecture: Modeling Guides (USGS/Haitjema) - Lecture: Common Modeling Errors
  - Lecture: Overview of Advanced MODFLOW
  - Packages + Versions + Transport

April 24 (blended)
9 am - 3 pm

* **Modeling projects**
  - Analysis of Pumping test with MODFLOW model *(to be continued independently)*
  - Dewatering exam problem: flow model construction, manual calibration, application, budget, and source analysis *(to be continued independently)*

May 25 (online)
Closing session and discussion

"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, thereby facilitating a self-assessment process. It is an effective way to see where you stand and figure out which parts are giving you a bit of trouble.
The final session of the course is strategically scheduled approximately one month later, to give a better opportunity to assimilate the course material previously presented.

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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.

Randy Hunt, PhD, worked as a researcher at the USGS for over 35 years. He is an author of the standard text on *Applied Groundwater Flow Modeling*, has authored more than 220 publications, and is recognized as a world authority on modeling groundwater/surface-water interactions, calibration/uncertainty analysis, and pathogen transport.

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.

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