



**Geology UM : August 08th -10th 2017
Beginners Short Course**

Groundwater Modelling for Beginners is a three days, hands-on course which will introduce attendees to the theory and practice of computer simulation of groundwater flow processes. Groundwater modelling plays a significant role in the assessment of the sustainability of groundwater resources and particularly in the prediction of impacts likely to be caused by human activities or climate change. It is an objective methodology that forms a component of the broader science of environmental modelling which deals with the science and the art of simulating environmental phenomena, in order to address questions of a “what happened?” or “what if?” nature. Groundwater models are essential tools for predicting what is expected to happen to groundwater levels, stream interaction and dependent ecosystems as groundwater is pumped for irrigation or public water supply, or intercepted during mining or infrastructure activities.

Who should attend?

The course is aimed at novice groundwater modellers or those wishing to embark on a career in groundwater modelling. Attendees should have a fundamental knowledge of hydrogeology, good proficiency in computing, and *some* exposure to first-year undergraduate mathematics. **Computer will be provided for hands-on exercises and tutorials.** Requisite software will be provided.

What do you get?

- ✓ Hands-on guidance with Visual MODFLOW
- ✓ A complete set of course lecture
- ✓ Exposed to Malaysian case study
- ✓ Course will be in the interaction mode
- ✓ Buffet Lunch and morning/afternoon tea each day



Enjoy a professional training environment

Where:

Computer Lab, Faculty of Science,
University of Malaya

When:

Tuesday 08th – Thursday 10th August 2017

Cost (including GST):

Course fee RM 900
Student fee RM 700
*Group discounts apply
(more than 3 persons – 10% discount)

Course Outline

Day 1

Introduction to Groundwater Modelling
Developing Aquifer Conceptual Model
Groundwater Flow Equation
Numerical Solution
Overview of MODFLOW
Visual MODFLOW

Day 2

Visual MODFLOW Exercise

Day 3

Numerical modelling approximations
Case study



Course Outline:

- ✓ Introductory overview – why models are developed, time and space scales, modelling stages, data requirements, types of models
- ✓ Best practice - Malaysian EIA's modelling guidelines
- ✓ General concepts - conceptual models, mathematical models
- ✓ Data analysis - residual mass analysis, cause-and-effect evidence
- ✓ Mathematical model stages - discretisation, calibration, verification, prediction, water balance
- ✓ Software - MODFLOW, graphical user interfaces
- ✓ Overview of MODFLOW - versions, packages, processes
- ✓ Theory - groundwater flow equations
- ✓ Practice - approximations to equations, finite differences, finite elements
- ✓ Solution algorithms - how equations are solved, iterative methods
- ✓ Overview of analytical modelling
- ✓ Exercises - Rainfall residual mass analysis; conceptual model construction
- ✓ Tutorials - MODFLOW using Visual MODFLOW interface; iterative solution algorithms

Expected Outcomes:

- ✓ Better appreciate why models are necessary
- ✓ Conceptualise a problem through systematic cause-and-effect analysis
- ✓ Gain a good understanding of the sequential stages of modelling
- ✓ Become familiar with Malaysian EIA's best practice
- ✓ Gain specialist knowledge in model development using MODFLOW software
- ✓ Gain basic knowledge in model development using Visual MODFLOW software
- ✓ Be acquainted with the underlying theory, approximations and solution techniques.

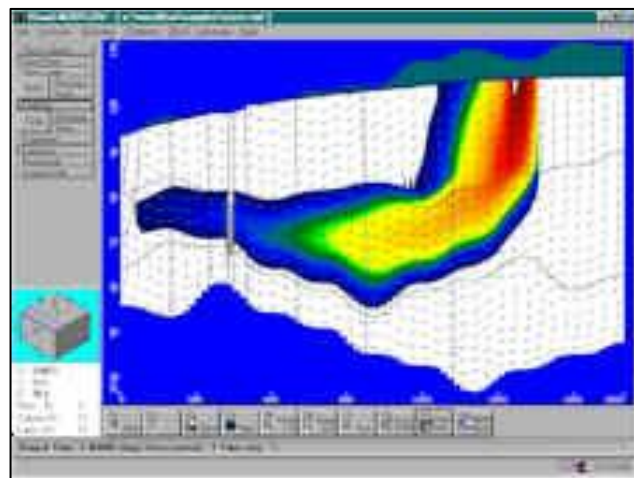
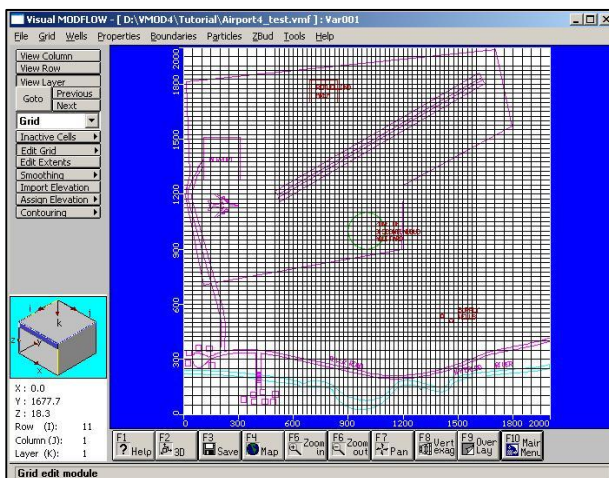
Presenters:



Prof. Dr. Ismail Yusoff
PhD
(Hydrogeology)
Univ. of East Anglia (UK)



Dr. May Raksmeay
Doctor of Eng.
(Groundwater Modeling)
Kyushu University (Japan)



Principles and practice of Groundwater Modelling for beginners using MODFLOW interface.

"This course is very good for the beginner in groundwater modelling. The practical component consists of hands-on exercise with a standard Visual MODFLOW model exercise followed with selected exercise under problem solving mode. The tutorials are meant to teach you about modelling and MODFLOW rather than all the features of Visual MODFLOW. Our main objective is for you to be able to easily adapt the concept of groundwater modelling and able to use it with any modelling softwares."

Prof. Dr. Ismail Yusoff
Dr. May Raksmeay

training for better future living...

REGISTRATION FORM

Faculty of Science, UM Tue.08th—Thu. 10th August 2017

Attendee Details:

MR MRS MS MISS DR PROFESSOR COUNCILLOR

First Name: _____ Last Name: _____

Email: _____

Institution/Organization: _____

Job Title: _____

Postal Address: _____

City: _____ Country/State: _____ Postcode: _____

Phone: _____ Mobile: _____ Fax: _____

Course Fee Details—incl. GST(RM):

Course Fee	<input type="checkbox"/>	RM 900
Students Fee	<input type="checkbox"/>	RM 700

(group discounts for 3 or more are available. Contact us for more details)

Total Fee:

Terms and Conditions
 All registrations are provisional until full payment has been received. Discounts for multiple registrations only apply if all registrations are received at the same time.

A replacement attendee can be arranged at any time without cost. Please advise the office as soon as possible.

There are no refunds for cancellations 7 or less days before the commencement of the course.

There will be a 50% refund for cancellations 21 days or less before the commencement of the course.

Payment Details:

Cheque / Bank draft made payable to:
BENDAHARI UNIVERSITI MALAYA
 Note: Please send your cheque / bank draft to -
 Groundwater Modelling for Beginner Secretariat,
 Faculty of Science,
 University of Malaya,
 50603 Kuala Lumpur, Malaysia.

Telegraphic transfer to:
 A/C Name: **BENDAHARI UNIVERSITI MALAYA**
 A/C No: **8001279998**
 Bank Name: **CIMB Bank Berhad, University of Malaya Branch, 50603 Kuala Lumpur, Malaysia.**
 SWIFT CODE: **CIBBMYKL**
 Note: Please state on the TT that the funds are for
"Groundwater Modelling for Beginners".
 Please email a scan copy of the TT to:
syafiq@um.edu.my

Where did you hear about this course?

Email
 UM Website
 Facebook
 LinkedIn
 Colleague/Friend
 Other (specify) _____

IMPORTANT DATES

Deadline for Registration : 15th June 2017
Registration with full payment: before 15th June 2017

Kindly send your registration form via e-mail or fax to:
Groundwater Modelling for Beginners
 Faculty of Science,
 University of Malaya,
 50603 Kuala Lumpur, Malaysia

Tel: +603 – 79677163 Fax: +603 – 79566343
 Email: syafiq@um.edu.my

