UNIVERSITY OF MISKOLC

FACULTY OF
EARTH AND ENVIRONMENTAL
SCIENCES AND ENGINEERING

**Courses:**
**Groundwater Flow and**
**Contaminant Transport Modeling**
**(for HgE and EnvE)**

# Course information


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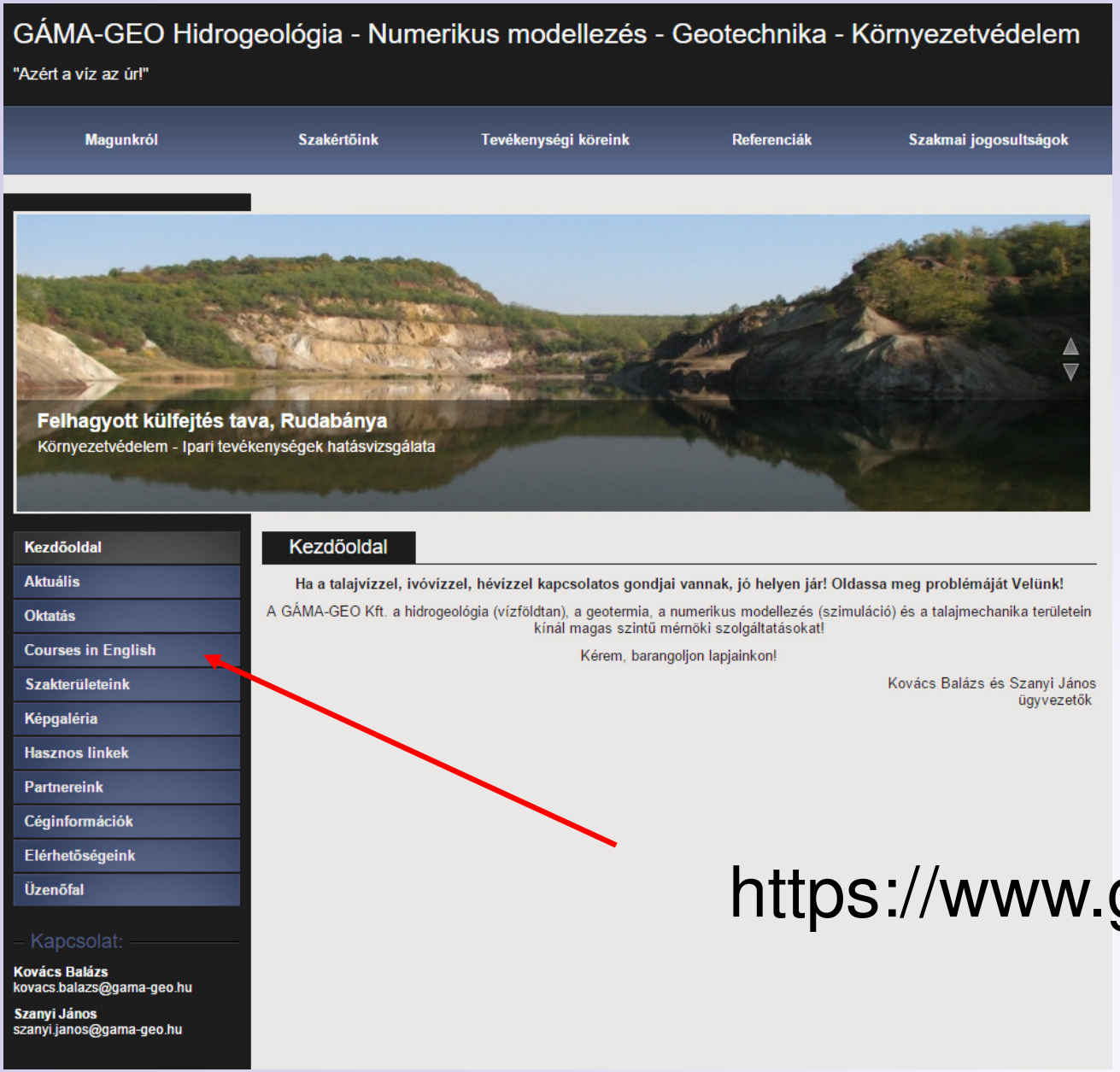
University of Miskolc

Institute of Environmental & Water Management

# Course description

- The course is held in the lecture room C/2 205. each Monday from 8.15 till approx. 11.20
- The course based on individual work on your own computer
- This course supported by distance learning tools!
- There are several videos with general information about the topic, with technical and modeling technical details to be downloaded from the internet
- There will be two consultancy in Hungarian for students attending the Curricula in Hungarian (if any)
- You may freely contact me via e-mail or you can ask for a consultation during the semester (mainly on Mondays)
- You must submit your assignments in a prescribed form (both the datasets and the report) to get my signature
- To have the credits you must solve a problem similar to the assignments alone

# All information can be found on the net




https://www.gama-geo.hu

# Time schedule for the courses

| Week | Date | Topic (theory and practice) |
|---|---|---|
| 1 | 09.02.26 | Introduction, general course information, first introductory model |
| 2 | 16.02.26 | Steady state GW Flow modeling (basic packages) |
| 3 | 23.02.26 | Steady state GW Flow modeling (advanced packages) |
| 4 | 02.03.26 | Selected steady state problems & consultancy |
| 5 | 09.03.26 | Transient GW flow modeling 1. (pumping test simulation) |
| 6 | 16.03.26 | Transient GW flow modeling 2. (flood simulation) |
| 7 | 23.03.26 | Transient GW flow modeling 2. (complex case simulation) |
| 8 | 30.03.26 | Selected transient problems & consultancy |
| 9 | 06.04.26 | Public Holiday (Eastern Monday) |
| 10 | 13.04.26 | Simulation of unit basin problems |
| 11 | 20.04.26 | Contaminant Transport Modeling basics |
| 12 | 27.04.26 | Rector's break (no courses) |
| 13 | 04.05.26 | Contaminant Transport Modeling advanced/heat |
| 14 | 11.05.26 | Consultancy and discussion of selected transient problems |

# How to start

- Visit the site https://www.gama-geo.hu
- Search for the menu
  **Courses in English/GW Flow & Cont. transp  to obtain general informations**
- **Install the code (see instructions later!)**
- **Follow the course and do the assignments**
- In case of problems or to learn alone - check the videos
  **Courses in English/EduViedos  to download the educational materials**
  - 1. Please watch the introductory videos (#00 and #0)
  - 2. Please watch the videos to get know the software by building a simple model (videos #1 and #2)
  - 3. Please go step-by-step and parallel try to solve the assignments
  - Consult me if required by sending the dataset and the description of your problem

# How to start

- Download the SW Processing MODFLOW v8.047 from www.simcore.com
  https://www.simcore.com/wp/archive/
  We will use version 8 and not v7 or X!
- Install the sw Processing MODFLOW v8.047
- Add the registration code (otherwise it works in demo mode!)
  Registration code: PMFV8 – YQFGE – TXTJX – A57BJ – 4KXMT

# Software installation tips

- There are no official computers distributed by us to the students, please to use your own!
  - no special configuration needed
  - Windows op. system
  - code Processing Modflow for Windows ver. 8.0.47 for Win8, Win10 or Win11.

- The software can be downloaded from the site: **www.simcore.com**. Please to **download the version v8.0** and not the freeware version 5.3.3!!! (Both can be installed but the commercial version will be restricted in model size).
- Please to install the code into a directory not far from the root (for. ex. d:\kb\pm8; c:\simcore\pm5 or similar, **don't use Desktop, Users directory or the documents directory created by the Windows!**

# Participation

- 1. Take your own laptop with the sw installed with you. Try to do the job simultaneously!
- 2. Try to follow the steps but to understand what and why to do is more important! You may find the solution (which menu? which button? etc.) of your problem in case you understand the process
- 3. Ask please if something is not understood
- 4. Slow me down if the speed is too high!
- 5. Try to do the assignments immediately when your memories are still strong. In case you do your assignments after the course you will much better remember on it!
- 6. Check the videos on the net if needed and/or read the manual (it is written in a quite simple English for better understanding!)
- 7. Write your problem and send your files attached (at sending files please make them freely downloadable) The best way to transfer files is to send a link(Dropbox, google drive, etc.) or to use Wetransfer or Mamutmail. Please send just one compressed file instead of hundreds of files of your directory.

# Assignments

- 1. Hydraulic modeling of a heat pump pumping and injection
- 2. Steady state & transient model of an underground parking-lot
- 3. Transient model of a pumping test
- 4. Investigation of a modified unit basin at unconventional boundary conditions
- 5. Modeling remediation of a contaminated site
- 6. Heat transport model of a  GW based cooling system

All assignments should be **completed before the last Monday of the Semester**. They should be delivered both digitally (data sets and short resume) and in pdf printed version (short resume and some figures of interest to demonstrate the work completed)

The assignments will be uploaded step-by-step during the semester!

**Whether modeling or real life, never give up easily!”**
(Wen-Hsing Chiang, creator of PMWIN)

Thanks for
Your attention!