

TREACTMECH Short Course

February 19-21, 2020

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Instructors

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This course will provide a hands-on introduction to the coupled Thermal-Hydrological-Mechanical-(BioGeo)Chemical (THMGB) Simulator TREACTMECH. Sample problems include applications to hydrofracturing in unconventional hydrocarbon reservoirs and stimulation in Enhanced Geothermal Systems (EGS). These problems serve as prototypes for creating input files for new applications. The course will also include discussions of the underlying physical and chemical processes, as well as the mathematical and numerical approaches used.

AGENDA

Wednesday, February 19, 2020

Afternoon Session

12:00 Welcome, safety, introductions, overview of course (lunch served)

- Course objectives and outline
- Code installation on participant laptops and testing
- Installation of text editors and plotting software

*14:00 **TREACTMECH basics***

- Overview of TREACTMECH
- Multiphase Heat and Fluid Flow
- Geomechanics
- Reactive-transport
- Discussion of heat and fluid flow input and output files
- Discussion of geomechanical input and output files
- Discussion of chemical input and output files (refreshments served)

*15:45 **Problem No. 1***

- Problem overview
- Mesh generation
- Flow initialization
- Plotting initial results

18:30 Guest Speaker Presentation (Dinner served, Restaurant/location: TBD)

Thursday, February 20, 2020

*9:00 **Problem No. 1 – continued (refreshments served)***

- Mechanics initialization
- Plotting initial results
- Injection Simulation (Fracture Stimulation)
- Plotting results and discussion (lunch served)

*13:00 **Problem No. 2 – Enhanced Geothermal System stimulation***

- Problem overview

- Discussion of geomechanical input and output files
- Mesh generation
- Flow Initialization
- Plotting initial results (refreshments served)
- Mechanics Initialization
- Plotting initial results

17:00 Adjourn

Friday, February 21, 2020

*9:00 **Problem No. 2** – continued (refreshments served)*

- Injection Simulation
- Plotting results and discussion (lunch served)

*13:00 **Adding Reactive Transport to THM Problems***

- Injection of a tracer
- Mineral dissolution-precipitation
- Porosity - permeability changes
- Open Discussion (refreshments served)
- Class Evaluations

17:00 Adjourn

*Meals and Refreshments will be served after the meeting begins, while work is being performed.
Attendance is required during these times.*