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Computational problems: attack strategy Develop mathematical model (usually requires a combination of math skills and some a priori knowledge of the system) Come up with numerical algorithm (numerical analysis skills) Implement the algorithm (software skills) Run, debug, test the software Visualize the results Interpret and validate the results Mathematical modeling

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The Holistic Numerical Methods Institute (http://numericalmethods.eng.usf.edu) uses every tool for teaching that the Internet provides, including downloadable textbooks, You Tube videos, worksheets, primers, class syllabi, PowerPoint presentations, online assessment, and even a blog.

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Numerical methods have been the most used approaches for modeling multiphase flow in porous media, because the numerical methodology is able to handle the nonlinear nature of the governing equations for multiphase flow as well as complicated flow condition in reservoirs, which cannot be handled by other approaches in general.

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