Goals of PETE 620:
In simple terms, the goal of PETE 620 (Fluid Flow in Petroleum Reservoirs) is to take the student from "sand grains to the classic solutions used in reservoir engineering." The path begins with a review of mathematics because many of us need to re-familiarize ourselves with algebra, calculus, differential equations, numerical methods, special functions, and other related topics/subjects. This review is intended to address most of the skills/topics which will be required in the course.

We then proceed to study the (mostly) empirical aspects of geology and petrophysics (rock properties), and then on to the fundamental building blocks of reservoir engineering: permeability, capillary pressure, relative permeability, and the electrical properties of reservoir rocks. After this we work through the "flow relations" — steady-state Darcy and non-Darcy flow, Material Balance (needed for conservation of mass), pseudo-steady-state flow, and finally the "diffusion" (or diffusivity) equations. At this point it is worth noting that we will have addressed the "fundamental" aspects of these building blocks — the assumptions, the limitations, and the need for advances in concepts for flow in porous media; and perhaps most importantly, the inherent non-linearities that exist for the "flow equations" used in Petroleum Reservoir Engineering.

In the last portion of the course we consider the classic reservoir solutions for radial and linear flow, flow in fractured wells, flow in naturally-fractured (or dual porosity) systems, and the definition and use of convolution in reservoir engineering applications.

The assignments in this course vary from fundamental developments to solutions which could be used in reservoir engineering practice. Students are expected to demonstrate mastery of all fundamental concepts covered in the course. In addition, the instructor welcomes students to suggest concepts, problems, and/or applications which may be useful for research.

Philosophy about Life:
Favorite Quote:
Opportunity is missed by most people because it is dressed in overalls and looks like work...
Thomas A. Edison, American Inventor (1847-1931)

Important Rules for Life:
- Always work harder than those you work for...
- Never own anything that eats while you sleep...
- Never own anything that needs repainting...
- If you have to herd cats, then be a rat...

Brief Bio: Thomas A. Blasingame, Ph.D., P.E.
Thomas A. Blasingame is a Professor and holder of the Robert L. Whiting Professorship in the Department of Petroleum Engineering at Texas A&M University in College Station Texas. He holds B.S., M.S., and Ph.D. degrees from Texas A&M University — all in Petroleum Engineering. In teaching and research activities, Dr. Blasingame focuses on petrophysics, reservoir engineering, analysis/interpretation of well performance, exploitation of unconventional reservoirs, and technical mathematics. Dr. Blasingame has made numerous contributions to petroleum technology in pressure transient test analysis, analysis of production data, reservoir management, characterization of reservoir performance, and general reservoir engineering. To date (September 2011), Dr. Blasingame has graduated 46 M.S. (thesis), 28 M.Eng. (report, non-thesis), and 10 Ph.D. students. Dr. Blasingame also holds a joint appointment in the Department of Geology and Geophysics at Texas A&M University where he regularly interacts with faculty colleagues and students on the topics of reservoir description, petrophysics, and stratigraphy/sedimentology.