

Two Free Online Courses in Reservoir Geomechanics

Reservoir Geomechanics

Mark D. Zoback, Stanford University Department of Geophysics

This course encompasses the fields of rock mechanics, structural geology, earthquake seismology and petroleum engineering to address a wide range of geomechanical problems that arise during the exploitation of oil and gas reservoirs. To date, over 10,000 people, principally college students and industry professionals, have completed the course. The course considers key issues such as the state of stress, prediction of pore pressure, estimation of hydrocarbon column heights and fault seal potential, determination of optimally stable well trajectories, casing set points and mud weights, changes in reservoir performance during depletion, and production-induced faulting and subsidence. This is a practical course for geoscientists and engineers in the petroleum and geothermal industries, and for researchers interested in the state of stress and its application to problems of faulting and fluid flow in the crust. The text of the course is *Reservoir Geomechanics* by Mark Zoback, available from Cambridge University Press and Amazon in print or electronic versions.

Registration opens February 1, 2020. Course begins February 10, 2020

<https://www.edx.org/course/reservoir-geomechanics>

Unconventional Reservoir Geomechanics

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Production of hydrocarbons from extremely low permeability unconventional reservoirs through horizontal drilling and multi-stage hydraulic fracturing has transformed the global energy landscape. Although hundreds of thousands of wells have been drilled and completed, recovery factors remain extremely low from both tight oil (2-10%) and shale gas reservoirs (~25%). This course, significantly updated from last year, will cover topics ranging from flow in nanometer-scale pores to the state of stress at the basin-scale. After reviewing fundamental geophysical principles, the course will address important engineering aspects of horizontal drilling and hydraulic fracturing including microseismic monitoring, well-to-well interactions, the impact of the state of stress on hydraulic fracture propagation, and the management of induced seismicity. The text of the course is *Unconventional Reservoir Geomechanics* by Mark Zoback and Arjun Kohli, available from Cambridge University Press and Amazon in print or electronic versions.

Registration opens February 1, 2020. Course begins March 30, 2020

<https://www.edx.org/course/unconventional-reservoir-geomechanics>

To Enroll: Go to edX.org and register for an account (free). To enroll, go to the links above. Two lectures will be released each week. Accessing the course content is free. There is a fee to access the homework assignments and to receive a verified certificate upon completion of the course.