# Prospect Resources Assessment – Applied

Course Description

This three-day course, that can be given in-person as well as online, consists of lectures and hands-on exercises, to provide participants with in-depth knowledge of methods used for the calculation of prospect resources and estimation of chance of success. The first modules address fundamentals, serving as basis for the exercises. Towards the end, more complex methods (such as aggregation, correction for downdip well position, etc.) are addressed. Exercises are proposed to the students at the end of most of the chapters. These involve the use of the RoseRA and Toolbox applications; a tutorial of both is provided prior to the exercises.

Course Outline

1. *Introduction*. Uncertainty & chance. Resources & reserves.

2. *Statistics*. Probabilistic estimations. Montecarlo simulation. Frequency distributions (normal, lognormal, beta, stretched beta). Probit plots.

3. *Resource calculation methods*. Area x Net Pay; Net Rock Volume; Area versus Depth; Prospect Area Yield.

4. *Estimates & reality checks*. Analogs. Extreme percentiles. Central value. Estimation process. Reality checks.

5. *Size of the container*. Spill points, leak points, fill-to-spill cases, DHIs. P90 & P10 areas. HC column height.

6. *Reservoir parameters*. Thickness, Net-to-gross ratio. How (not) to use data from analog wells. Cut-offs. Porosity. Saturation, Buckles plot. Reservoir parameters from seismic data.

7. *Yield parameters*. Hydrocarbon phases & properties. Expansion factor (oil, gas). Recovery efficiency (oil, gas). Condensate (yield, recovery efficiency, shrinkage). Non-HC gases.

8. *Chance (probability of success)*. What are we risking? Chance adequacy matrix. Prospect chance & uncertainty. Play chance, prospect chance, well chance. Chance factors. Risking tables. DHIs, SAAM.

9. *Segments & aggregation*. To aggregate or not to aggregate? Dependence. Multi-segment prospects. Aggregation of multiple prospects. Complex trap. Multiple culminations. Stratigraphic trap. Correction for downdip well position. Prospects partly outside block.

10. *Prospect economics*. Commercial/economic thresholds. Truncation of resources. NPV, EMV, IRR. Portfolio.

11. *Performance tracking*. Post-drill resources versus pre-drill volumetrics. Post-drill parameter values versus pre-drill estimates. Percentile histograms. Probability of success versus success rate. Cause of failure. Bias.
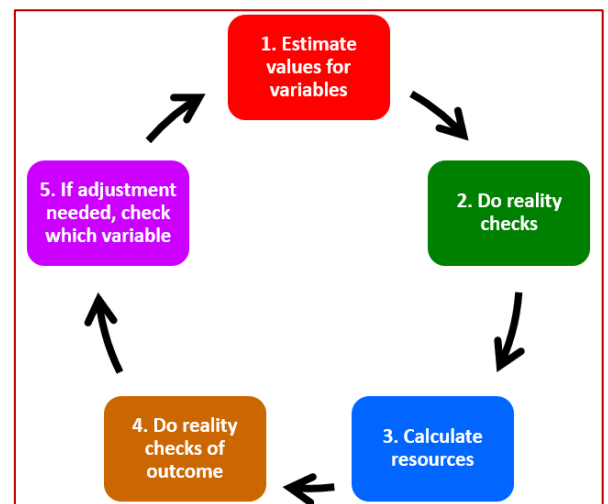
Who Should Attend

Geoscientists and engineers involved in prospect assessment.