Bird Geophysical
Interpreting the World [SM]

Bird Geophysical, established in 1997 by Dale Bird, is an earth science consultancy specializing in potential fields interpretation and instruction. Dale has over 35 years of experience in the petroleum exploration industry. He earned a Ph.D. from the University of Houston (2004, Geophysics), where he has since been appointed Adjunct Professor and Research Associate Professor (CV upon request).

Over the past 20 years, Dale has taught gravity and magnetic methods and interpretation at the University of Houston as well as exploration companies. He has recently updated his material and he is pleased to offer the following:

PROFESSIONAL TRAINING FOR EARTH SCIENTISTS
Exploration Potential Fields – Essential Understanding
Data, Methods, Interpretation

A four-and-a-half-day course includes eight lectures and a hands-on exercise (half-day each). The first four lectures review basic theoretical topics and rock properties, then continue with instrumentation, acquisition and processing, and finish with a thorough discussion of interpretation tools such as anomaly enhancements, source depth estimation, and modeling. Several data examples are included throughout, aimed at providing tangible understandings of the material presented.

The next three lectures, and exercise, focus on interpreting gravity and magnetic anomalies over different types of sedimentary basins. We look at platform basins first (also called crustal or cratonic sag basins), and then we follow the Wilson supercontinent cycle beginning with rift basins, then passive margins and ocean basins, and we finish with basins that form in convergent margins (from forearc to foreland basins). Each section includes several examples of data over sedimentary basins around the world; again, with a goal of increasing class participants' confidence when interpreting gravity and magnetic data.

The final lecture covers advanced topics, including applications of gravity gradient data (AGG and FTG), and methods for integrating heat flow and heat production data to calculate thermal properties, such as basement temperature and thermal gradients through basins and crystalline crust. The course may be shortened by skipping the exercise, and selective omission of material, for 3-day, 2-day and even 1-day courses.

4.5-day schedule

Day 1, Lecture 1	Theoretical summary, rock properties
Day 1, Lecture 2	Instruments, acquisition, processing
Day 2, Lecture 3	Gravity and magnetic anomaly enhancements
Day 2, Lecture 4	Depth-to-source estimation, 2D/3D forward/inverse modeling
Day 3, Lecture 5	Tectonic plates and supercontinents, basin classification, interpretation rules-of-thumb, platform basins
Day 3, *Exercise*	Hands-on 2D gravity and magnetic data modeling
Day 4, Lecture 6	Rift basins, passive margins, ocean basins
Day 4, Lecture 7	Convergent margin basins, basins with complex histories
Day 5, Lecture 8	Gravity gradients, heat flow, thermal properties

Please contact Dale Bird for fees and scheduling: 713-203-1927, dale@birdgeo.com, www.birdgeo.com

3-day schedule (no exercise, abridged topics)

Nearly the same material can be covered over three days by excluding the hands-on exercise and shortening topics. Note that, however, the hands-on exercise is an important element – it provides real-time experience to learn how changes in rock properties (density and magnetic susceptibility) and layer geometries reshape gravity and magnetic anomaly amplitudes and wavelengths.

Day 1, Lecture 1	Theoretical summary, rock properties, Instruments, acquisition
Day 1, Lecture 2	Processing, gravity and magnetic anomaly enhancements
Day 2, Lecture 3	Depth-to-source estimation, 2D/3D forward/inverse modeling, Tectonic plates and supercontinents
Day 2, Lecture 4	Basin classification, interpretation rules-of-thumb, platform basins, rift basins
Day 3, Lecture 5	Passive margins, ocean basins, convergent margin basins
Day 3, Lecture 6	Basins with complex histories, gravity gradients, heat flow, thermal properties

2-day schedule (no exercise, review of basics, abridged topics)

If a "refresher" of potential fields methods and applications is desired, then maybe a two-day review would be useful. Note that an understanding of potential fields methods and applications is considered to be prerequisite. There will be little time to dwell on topics.

Day 1, Lecture 1	Review: Theoretical summary, rock properties, Instruments, acquisition, processing, gravity and magnetic anomaly enhancements
Day 1, Lecture 2	Review: Depth-to-source estimation, 2D/3D forward/inverse modeling, Tectonic plates and supercontinents, basin classification, interpretation rules-of-thumb
Day 2, Lecture 3	Platform basins, rift basins, passive margins, ocean basins
Day 2, Lecture 4	Convergent margin basins, basins with complex histories, gravity gradients, heat flow, thermal properties

1-day schedule (no exercise; no theory, acquisition, processing or interpretation methods; short review of some basics; introductory review of topics)

Considered an "emergency refresher" course. Those without an understanding, and even experience, with potential fields methods and applications will find the material challenging. Very little time will be available for thorough discussions of the topics.

Day 1, Lecture 1	SHORT Review: Gravity and magnetic anomaly enhancements, Tectonic plates and supercontinent, basin classification, interpretation rules-of-thumb, platform basins, rift basins
Day 1, Lecture 2	Passive margins, ocean basins, convergent margin basins, basins with complex histories, gravity gradients, heat flow, thermal properties