

# **TECH21 ENGINEERING SOLUTIONS LTD**

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## *Directional Drilling and Borehole Surveying Course*

### *Next Course Dates*

April 5<sup>th</sup> to 7<sup>th</sup> 2010  
June 7<sup>th</sup> to 9<sup>th</sup> 2010  
Sept 13<sup>th</sup> to 15<sup>th</sup> 2010  
Nov 8<sup>th</sup> to 10<sup>th</sup> 2010

***£1400.00 GBP per person inc Accommodation (two nights)***

This course provides three days of informative lectures and practical simulation exercises covering the principles and practice of directional drilling and borehole surveying. Well engineers, drilling engineers and technical staff who use directional drilling data such as geologists, surveyors etc will find the course useful in understanding the jargon of deviated drilling and the theory behind the practice in field operations.

Your lecturer will be Prof. Angus Jamieson, who is a well-known consultant and lecturer in the drilling industry internationally. Angus has a long experience of both operational and theoretical work in many oilfields around the world and was last year's chairman of the SPE Technical Section for Borehole Surveying. Twice voted top lecturer at the Shell International Drilling School in The Hague, Angus' lectures are amusing and informative and your three days will pass quickly.



*All course materials will be provided but it would be helpful if you could bring your own laptop computer if you have one. Bookings should be made through Mrs Heather Barot in our Inverness Office.*  
<mailto:heather.barot@tech21.co.uk>

## The Kingsmills Hotel, Inverness



The course will be held at the Kingsmills Hotel in Inverness. This luxurious Hotel is one of the best in the Highland region and is set in its own grounds.



Delegates will enjoy the quality of the Highland hospitality.



## By Road from airport

Follow signs to Inverness. Pass Retail Park (Tesco) on left, straight on at roundabout. Next roundabout, take 2nd exit B865 then at next roundabout take first exit B9006 (Old Perth Road). At next roundabout take 2nd opening hotel is past traffic lights on left hand side.

## By Rail

- 10 mins from Inverness Railway Station      Edinburgh = 2.5 hrs    - Glasgow = 3 hrs    - Aberdeen = 2 hrs

## By Air

- 15 mins drive from Inverness Airport

We wish you a safe journey and look forward to welcoming you to The Kingsmills Hotel. If you require any further information then please do not hesitate to contact the hotel on **+44 (0)1463 237166**

## Course Programme

### Day 1

<b>11.00 – 11.30</b>	<b>Arrive at the Hotel for coffee Introductions and Course Objectives</b>
<b>11.30 – 12.30</b>	<b>Mapping and Coordinate Systems History of Mapping UTM Projection System North Reference (Magnetic, True, Grid etc)</b>
<b>12.30 – 13.30</b>	<b>Lunch</b>
<b>13.30 – 14.30</b>	<b>Well Planning Field Layout Planning Basic Well Shapes Anti-Collision Considerations Drillability Limitations Complex 3D Well Design (Using 5D software) Well Path Design Exercise</b>
<b>14.45 – 15.45</b>	<b>Practical Kick Off Techniques MWD and MPT Understanding Tool Face Reactive Torque Steering</b>
<b>16.00 – 17.00</b>	<b>Simulator Exercise for Kick Off</b>

## Day 2

09.00 – 10.00	Survey Tools and their uses History of Survey Equipment Principles of Operation Magnetic / Gyroscopic / Inertial
10.15 – 11.15	Examples of Each tool type and their application
11.30 – 12.30	Methods of Calculation and QC
12.30 – 13.30	Lunch
13.30 – 14.30	Magnetic Interference and Short Collar Techniques
14.45 – 17.00 exercise	Drilling an 'S' Well from surface to TD simulator

## Day 3

09.00 – 10.00	Survey Accuracy and QC Part 1 Establishing Coordinates Surface navigation accuracy GPS and DGPS Datums and Spheroids
10.15 – 11.15	Survey Accuracy and QC Part 2 Sources of Error Uncertainty Ellipse Calculations Target Reduction and Tool Selection
11.30 – 12.30	Anti-Collision Separation Geometry The Travelling Cylinder Plot Probability of Collision
12.30 – 13.30	Lunch
13.30 – 14.30	Common Pitfalls to avoid (Human Error)
14.45 – 15.45	Landing Curves for Extended Reach Drilling Medium Radius Short Radius
16.00 – 17.00	ERD drilling exercise