

# Course Syllabus

## PTRE 303 Well Logging

### Course Syllabus

#### Course/Instructor Information

<b>Course Code &amp; Title</b>	PTRE 303 Well Logging		
<b>Lecture</b>	TTh 13.30-14:00		
<b>Instructor Name</b>	Hussein Ghorayeb,M.s.c	<b>Office</b>	G 112
<b>Phone</b>	3481	<b>Email</b>	<a href="mailto:h.gharib@bau.edu.lb">h.gharib@bau.edu.lb</a>
<b>Office Hours</b>	MW:12:00-13:00	TTh:14:00-15:00	W:10:00-11:00
<b>Term/Year</b>	Fall 2015-2016		

#### Course Description

##### Course-in-brief

Basic formation evaluation concepts, borehole environment, principles of resistivity, radiation, thermal and elastic wave measurements and measuring tools, applications to formation evaluation using commercial software package. Lithology plots. Saturation, irreducible saturation and porosity studies from well logs. Shale sand analysis. Complex reservoir analysis. Wire-line Formation Testing. Integration of core, log, well test and seismic data evaluation. Cementing quality monitoring. Gun perforating. Production Monitoring.

##### Prerequisites by topic

PTRE 303 well logging

#### Course Resources

##### Textbook

Schlumberger Log Interpretation Principles/Application, Schlumberger Wireline & testing 225 Schlumberger Drive sugar land,Texas 774778.

#### Educational Aims

This course provide students with the Basic principles of well logging methods making them easily to distinguish the difference between the types of logging operation or formation evaluation. Well logging is very crucial to be carried during the life cycle in any oilfield drilling operation.

Identifying the shale and sand zone can be identified using the well logging techniques. At later production stages production logging must be used to facilitate the production monitoring and to prevent any production challenges.

## Intended Learning Outcomes

As a result of successful examinations and assignments, the student will be able to:

1. Determine the porosity and shale, sand zone by analyzing the well log plot .
2. Distinguish the usage differences between logs
3. Production monitoring prediction and mitigation the problems occurs during production.
4. Basic evaluation concept and borehole environment.
5. Resistivity analysis and effective Perforation Methods.

## Laboratory Experiments

**Rationale.** Laboratory Experiments is one of the most effective means of learning. Experiments helps students apply theories and concepts they learn and enhance their problem solving and thinking skills. A student giving serious attention to solving problems in due time is like a farmer obeying the “law of the harvest”; affording the right care for the farm at the right moment.

**Policy.** In this course, Labs will be assigned in conjunction with lecture topics as incremental learning tool. Due dates of assignments will be announced at appropriate times. Each set of experiment will be collected for grading. The solution of each experiment is a reflection of understanding of the subject matter. So, a solution must be logically organized and neatly presented. It must also include the problem statement, all pertinent solution steps, equations used, assumptions made, legible supporting graphs, and boxed answers with proper units. Use only one side of a sheet and start the solution of a new problem on a new page.

## Class Policies

### Class Attendance

**Rationale.** Attending class indicates a sense of responsibility and willingness to learn. Research has shown that attending classes, asking good questions, participating in class discussion, and submitting assignments and projects on time results in a better student’s performance.

**Policy.** Attendance is required! Please be in class on time. Attendance will be taken at the beginning of each class period. In case you are not present when attendance sheet is passed on, you will be marked absent. If you are late for more than 10 minutes you will not be allowed into the classroom not to cause distraction. You will receive a Dean’s warning if you miss more than 3 classes and shall be dismissed from the course if you miss more than 5 classes. You shall receive 5 bonus points at the end of the semester if you attend all classes and follow all course policies and procedures.

### Class Discussion

**Rationale.** Active participation in classroom discussions, asking questions, and answering them gives life to a classroom and drives learning. Positive communication between the students and the instructor in the classroom and outside through various means such as Moodle, email, and twitter impacts students’ learning positively.

**Policy.** Feel free to voice your opinions and ask questions anytime during a class period. Practice your right and freedom to learn. Remember you are here to learn and we are here to teach and

that teaching and learning are forever intertwined. You can help me teach you as much as I can help you learn. Be an active participant in the learning process and recognize that it takes a team effort to realize meaningful things in life.

### Make-up Tests and Late homework Policy

NO makeup test will be given and late assignments or project will not be accepted unless the reason is beyond the student's control. *Do not abuse the use of excuses because in the end it is of no use!*

### Expected Behavior

includes attending all class activities; meeting deadlines; observing common courtesies to fellow students, teachers, and staff; being honest; making a diligent effort to learn; and does not engage in any disruptive irresponsible manner. Legitimate collaboration is encouraged but academic collusion or dishonesty will not be tolerated.

### General Policies

These policies are available in the Students' manual and on the University website <http://www.bau.edu.lb/students/>. For inquiries about these policies the student should refer to the course instructor and faculty advisor.

## Assessment and Evaluation

Assessment Item	Tentative Date	Marks
Assessment 1	As assigned	30%
Assessment 2	As assigned	30%
Final Exam	Exams period	40%

## Topics

Week	Subjects covered	Lab Experiments
Week 1	Introduction to Well logging, History, logging principles	
Week 2	Fundamentals of well quantitative log interpretation, Borehole Environment	
Week 3	Spontaneous Log	
Week 4	Density Log	
Week 5	Neutron log	
Week 6	Sonic Log	
Week 7	Assessment 1 +sonic Log	

<b>Week 8</b>	NMR Log	
<b>Week 9</b>	Log tutorials	
<b>Week 10</b>	Production monitoring	
<b>Week 11</b>	Corrosion analysis	
<b>Week 12</b>	Scale analysis	
<b>Week 13</b>	Wax and Asphalt Appearances	
<b>Week 14</b>	Assessment two+ Case Study	
<b>Week 15</b>	Revision	
<b>Week 16</b>	Final exam	