KHAZAR UNIVERSITY

SCHOOL OF ARCHITECTURE, ENGINEERING AND APPLIED SCIENCES

COURSE SYLLABUS

Advanced Drilling Engineering

Identification

Semester:	Spring, 2010
Department:	Petroleum Engineering
Subject:	Advanced Drilling Engineering
Credit-units:	3
Instructor:	Ph.D, *ELNUR AMIROV*
Office:	room 414
Phone:	(+994 12) 421 10 93
E-mail:	amirovelnur@yahoo.com

Textbooks and Materials: **Core Textbook:**

1. Author Hussain Rabbia, ‘’***Well Engineering and construction’’***, 1989.

Supplementary book:

2. Larry Lake. Petroleum Engineering Handbook, vol.6, Drilling Engineering, SPE, 2007.

For class presentation and discussions, the student should utilize the Journal and Internet Materials. Moreover, the course does not limit the use of learning materials at the Khazar University library.

Objectives This course is a main subject of a Drilling Engineering. In this course will be covered a lot of topics of Advanced Drilling .

General Objectives of the Course:

- ✓ To meet curriculum requirements of the School of Engineering and Applied Sciences

Specific Objectives of the Course:

- ✓ To support students academically, to provide background understanding about drilling process.
- ✓ To encourage students participation and interaction and fostering and atmosphere of to learn and respect.
- ✓ Focus on aspects that are important to exploration and production activities in Petroleum Industry.

Outline Overburden gradient calculations for offshore wells, MWD data, Formation integrity test, Theory of wellbore breakage, Kick tolerance, Casing properties, Casing design, Displacement theory, Cement calculations, Selection of liner hangers, Cement plugs, Drilling fluid problems, Solids control, Directional well planning, Wellbore stability.

Developed Skills

- ✓ Analytical thinking
- ✓ Critical reasoning
- ✓ Leadership
- ✓ Presentation
- ✓ Other

Evaluation

Participation & activity	10
Quizzes	20
Mid-term Examination	30
Final Examination	40
Total	**100**

Learning and Teaching Methods This course considers active learning process: lectures, discussions and presentations.

Course Schedule

Week	Topics	Hours	Reading
1	Pore pressure	4	[1] Ch.1, pp. 1-57
2	Formation integrity test	4	[1] Ch.2, pp. 59-79
3	Kick tolerance	4	[1] Ch3, pp. 81-104
4	Casing properties	4	[1] Ch.4, pp. 105-145
5	Casing design principles	4	[1] Ch.5, pp. 157-191
6	Cementing	4	[1] Ch.6, pp. 203-258
7	Drilling fluids	4	[1] Ch.7, pp. 275-315
8	Mid-term exam		
9	Practical rig hydraulics	4	[1] Ch.8, pp. 319-354
10	Directional drilling	4	[1] Ch.9, pp. 357-393
11	Drillstring design	4	[1] Ch.10, pp. 395-455

12	Wellbore stability	4	[1] Ch.11, pp. 459-502
13	Horizontal and multilateral wells	4	[1] Ch.12, pp. 505-554
14	High pressure and high temperature wells	4	[1] Ch.13, pp. 555-589
15	Hole problems	4	[1] Ch.14, pp. 591-644
16	Drill bits	4	[1] Ch.15, pp. 659-696
	Final Examination		