UNIVERSITY of NICOSIA

Course Code	Course Title	ECTS Credits
OGEE-350	Well Construction & Completion Design	8
Department	**Semester**	**Prerequisites**
Engineering	Fall, Spring	OGEE-220, OGEE-320, OGEE-330
Type of Course	**Field**	**Language of Instruction**
Required	Oil & Gas Engineering	English
Level of Course	**Year of Study**	**Lecturer(s)**
1st Cycle	3rd	Dr Sarris Ernestos
Mode of Delivery	**Work Placement**	**Co-requisites**
Face-to-face	N/A	None

Objectives of the Course:

The main objectives of the course are to:

- Introduce the students to the fundamental concepts of well log interpretation.
- Provide solid knowledge to interpret well logs to in order to make decisions relative to well completion, etc.
- Provide solid knowledge to read well logs, apply the necessary environmental corrections, and perform well log interpretations to hydrocarbon bearing formations and communicate the results effectively.
- Provide solid technical knowledge to conduct library and/or internet search and communicate the results through an oral presentation.
- Provide solid technical knowledge to recognize safety issues including handling radioactive sources.
- Help the students obtain practical knowledge and technical knowhow through simulations with software in the computer laboratory.

Learning Outcomes:

After completion of the course students are expected to be able to:

- Evaluate near wellbore damage caused by various operations such as drilling, completion, etc, and quantify effect on well productivity.
- Make justification on selection of stimulation methods (matrix acidizing, hydraulic fracturing and acid fracturing) for different types of reservoir/well candidates.
- Interpret fundamental and criteria of well stimulation to enhance oil/gas recovery and improve reservoir management
- Pre-screen appropriate fracturing fluid, chemical additives, and proppant based on formation conditions.
- Perform optimal design of fracturing treatment on real wells in project by construction of data set, prediction of fracture geometry and determination of

pumping schedule etc., using 2D fracturing model and pseudo-3D model.
- Cooperate in a team to solve problems in the project
- Provide post-fracturing evaluation by estimate of fracture half length, fracture conductivity, formation permeability and folds of increase in productivity.
- Handle numerical calculations of the hydraulic fracturing technique through computer simulations to predict the fracture pressure and fracture dimensions.

Course Contents:

- Introduction & overview: hydraulic fracturing and acidizing
- Productivity enhancement from stimulation and candidate selection
- Rock mechanics, in-situ stress and fracture geometry
- Rheology of fracture fluid
- Mini-frac test
- 2D fracture models and 3D fracture models
- Fracture treatment design
- Tip screen-out design: frac & pack
- Treatment pressure analysis and Post-treatment evaluation
- Acidizing
- Computer simulation laboratory (software tutorials)

Learning Activities and Teaching Methods:

Lectures, projects, software simulations, discussion

Assessment Methods:

Homework, project assignments, simulation laboratory reports, tests, final exam.

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
M. Economides and G. Martin	Modern Fracturing: Enhancing Natural Gas Production	Energy Tribune Publishing	2007	9781604616880
Schlumberger	Commercial Software: FracCADE	Schlumberger	2009	

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
P. Valko and M. Economides	Hydraulic Fracture Mechanics	John Wiley & Sons	1995	0471956643