

## **COURSE OUTLINE**

PTE 542 Carbonate Rocks (2 units) Fall 2013

### **DESCRIPTION:**

A graduate level course in petroleum engineering. Major topics include: (1) classification, (2) porosity development, (3) source rocks, (4) wettability, (5) capillarity, (6) compressibility, (7) specific surface areas, (8) relative permeability, (9) petrophysical properties, (10) formation evaluation, (11) overpressures and (12) thin section analysis.

### **INSTRUCTOR:**

Dr. George V. Chilingar  
Office Hour: Mondays 2:00 – 3:00 pm, HED 312  
Telephone: 323-932-8369

### **CLASS TIME AND LOCATION:**

Monday, 12 to 1:50pm, OHE 100C

### **TEXTBOOK:**

Carbonate Reservoir Characterization: A Geological-Engineering Analysis, Part I (Development in Petroleum Science) by G.V. Chilingarian, S.J. Mazzullo, H.H. Rieke, 640 pp, Elsevier, Amsterdam, 1992.

### **GRADING:**

Homework	<b>15%</b>
Midterm	<b>25%</b>
Final	<b>40%</b>
Report (including oral presentation)	<b>20%</b>

*Report and homework problems are due on the week of the midterm*

*Report would be on any carbonate oilfield in the world (geology, performance, etc.)*

## **SCHEDULE**

<b>Date</b>	<b>Topics</b>
8/26	Introduction to carbonate rocks, classification and differences
9/2	<i>Labor Day-University Holiday</i>
9/9	Petrophysical properties: porosity and permeability
9/16	Porosity development, dolomitization
9/23	Compressibility
9/30	Specific surface area, wettability and capillarity
10/07	Relative permeability
<b>10/14</b>	<b>Fracturing</b>
10/21	<b>Midterm Exam</b>
10/28	Fluid flow mechanism in carbonates
11/4	Overpressure in carbonates
11/11	Recovery from carbonate reservoirs
11/18	Thin-section analysis
<b>11/25</b>	<b>Acidizing</b>
<b>12/2</b>	<b>Presentation by Students-Last day of class</b>
<b>12/13</b>	<b>Final Exam 11am to 1pm, Room TBA</b>

### **SUGGESTED REFERENCES:**

- Carbonate Rocks, Vol. I, Origin, Occurance and Classification, Elsevier Publishing Co., 471 pp., 1967. (Co-editor and Co-author); translated into Russian, 1971.
- Carbonate Rocks Vol. II, Physical and Chemical Aspects, Elsevier Publishing Co., 413 pp., 1967. (Co-editor and Co-author); translated into Russian, 1971.
- Oil and Gas Production from Carbonate Rocks, Amer. Elsevier Publishing Co., 450 pp., 1971. (Co-editors and Co-authors: R.W. Marmon and H.H. Rieke)
- Secondary Recovery and Carbonate Reservoirs, Elsevier Publishing Co., 304 pp., 1972. (Co-editors and Co-authors: G.L. Langness and J.O. Robertson)
- Carbonate Reservoir Characterization: A Geological-Engineering Analysis, Part II, Development in Petroleum Science, 1996, 994 pp. (Co-authors: S.J. Mazzullo and H.H. Rieke.)