

# COURSE OUTLINE

PTE 542 Carbonate Rocks (2 units) Fall 2014

## 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) simulation.

## INSTRUCTOR:

Dr. George V. Chilingar

Office Hour: Monday 2:00 – 3:00 pm, HED 312

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## CLASS TIME AND LOCATION

Monday, 12:00 - 1:40 pm, OHE 100C

## TEXTBOOK:

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

## GRADING:

Homework **15%**

Midterm **25%**

Final **40%**

Report (including oral presentation) **20%**

Summary of Chapter I due on 9/15/2014.

Report due on 11/10/2014.

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

Summary of report (2-page) due on 10/13

Homework due on 11/13.

## SCHEDULE

Date	Topics
08/25	Introduction to carbonate rocks, classification and differences
09/01	<b>No class- Labor Day Holiday</b>
09/08	Petrophysical properties: porosity and permeability
09/15	Porosity development, dolomitization
09/22	Compressibility
09/29	Specific surface area, wettability and capillarity
10/06	Relative permeability
10/13	Fracturing
10/20	<b>Midterm Exam</b>
10/27	Fluid flow mechanism in carbonates
11/03	Overpressures in carbonates
11/10	Recovery from carbonate reservoirs
11/17	Simulation
11/24	Acidizing
12/01	<b>Presentation by Students</b>
12/12	<b>Final Exam 11am to 1pm</b>

### SOME 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-editor and Co-authors: R.W. Marmon and H.H. Rieke)
- Secondary Recovery and Carbonate Reservoirs, Elsevier Publishing Co., 304 pp., 1972. (Co-editor 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.)