

CBM003 ADD/CHANGE FORM

Undergraduate Council
 New Course Course Change *2005*
 Core Category: None Effective Fall 2008

or

Graduate/Professional Studies Council
 New Course Course Change
 Effective Fall __

1. Department: CHE ENG College: ENGR
 2. Person Submitting Form: Dr. Michael P. Harold Telephone: 34307

RECEIVED MAR 06 2008
 APPROVED OCT 22 2008

3. Course Information on New/Revised course:
 • Instructional Area / Course Number / Long Course Title:
PETR / 3313 / Reservoir Fluids
 • Instructional Area / Course Number / Short Course Title (30 characters max.)
PETR / 3313 / RESERVOIR FLUIDS
 • SCH: 3.00 Level: JR CIP Code: 14.2501.00 Lect Hrs: 3 Lab Hrs: 0

4. Justification for adding/changing course: To provide for new discipline areas

5. Was the proposed/revised course previously offered as a special topics course? Yes No
 If Yes, please complete:

• Instructional Area / Course Number / Long Course Title:
 ___ / ___ / ___
 • Content ID: ___ Start Date (yyyy3): ___

6. Authorized Degree Program(s): B.S. Petroleum Engineering

- Does this course affect major/minor requirements in the College/Department? Yes No
- Does this course affect major/minor requirements in other Colleges/Departments? Yes No
- Are special fees attached to this course? Yes No
- Can the course be repeated for credit? Yes No

7. Grade Option: Letter Instruction Type: ___ (Note: Lect/Lab info. must match item 3, above.)
(A,B,C...) *Lecture only*

8. If this form involves a change to an existing course, please obtain the following information from the course inventory: Instructional Area / Course Number / Long Course Title
 ___ / ___ / ___

• Start Date (yyyy3): ___ Content I.D.: ___

9. Proposed Catalog Description: (If there are no prerequisites, type in "none".) *and*
 Cr: 3. (3-0). Prerequisites: CHEM1372, MATH3321, MECE2334, PHYS1322, ^{and} PETR2311. Corequisites:
 PETR 3211, ^{and} PETR 3315, ^{and} PETR 3321. Description (30 words max.): Evaluation and correlation of
 physical properties of reservoir fluids. *var* Course includes laboratory evaluation. *f*

10. Dean's Signature:  Date: 3/6/08

Print/Type Name: Joseph Tedesco, Dean

UC 9783 08F

Cullen College of Engineering
CBM003 Supplement - B Fo Page 2 of 5
(New Course)

Must be attached to CBM003 form

Course: <u>PETR</u>	<u>3313</u>
<i>Subject Prefix</i>	<i>Course Number</i>

1. **Course Title:** Reservoir Fluids
Print course inventory screen using RARCAS/CATM and attach.
2. **Pre-requisite/Co-requisite:** CHEM 1372, MATH 3321, MECE 2334, PHYS 1322 and PETR 2311. Co-requisites: PETR 3211, PETR 3315, & PETR 3321.
3. **Rational for Course Format:** Standard university format
4. **Rational for Course Content:** Prepare students for more advanced topics in petroleum engineering
5. **ABET Constituents consulted:** Petroleum Engineering Advisory Board, several industry focus groups

State Course Outcomes: This course teaches the student the fundamentals of determination and evaluation of petroleum fluid properties, as well as the mathematical tools for the analysis and interpretation of data.


6. **Course Performance after implementing format and content changes:** _____¹
7. **Is course required?** X Yes No
8. **Required course outline attached?** X Yes No
9. **Estimated student demand** 50 _____ per semester

-
10. **Similar courses in other departments:** Yes X No
 a. *If yes, list course(s)* _____
 11. **Is course part of a sequence?** X Yes No
 a. *If Yes, identify the sequence and comment on the relation to prior and subsequent courses:* Simultaneous with Petroleum Engineering Lab (PETR 3211)
 12. **Textbook(s) and other required materials:** *The Properties of Petroleum Fluids, 2nd ed. McCain, W. D., Penn Well Publishing Co, Tulsa, OK, 1990*

Note: Special Fees: If special fees requested, **Course Related Fee Request Form will be required.**

¹ Department reports will be requested about the effects of your new course on your curriculum both 12 and 24 months after the effective date for this new course.

Cullen College of Engineering **UC 9783 08F**
CBM003 Supplement - B For Page 3 of 5
(New Course)

	2/21/08	<input checked="" type="checkbox"/> Approved
Chair of Initiating Dept. Signature	Date	

PETR 3313: Reservoir Fluids
Credits (3)

Course description: Evaluation and correlation of physical properties of reservoir fluids.
~~Course includes laboratory evaluations.~~

Pre-requisites: CHEM 1372, MATH 3321, MECE 2334, PHYS 1322 and PETR 2311. Co-requisites: PETR 3211, PETR 3315, & PETR 3321.

Textbook: The Properties of Petroleum Fluids, 2nd ed. McCain, W. D., Penn Well Publishing Co., Tulsa OK, 1990

Course Objectives. By completing this course the student will learn;

1. phase behavior of multi-component hydrocarbon mixtures, how these change with composition, pressure, temperature and various mixtures with saline formation waters.
2. determine properties of fluids used in reservoir engineering.
3. perform gas-liquid equilibria calculations using K-factors and apply these results to separator test conditions.

Course Schedule

Topics	Hrs
Classification and identification of reservoir by fluid type	1
Ideal and real gases	2
Examination #1	1
Reservoir engineering properties of gases: gas formation volume factor, viscosity, wet gas gravity and isothermal compressibility	3
Definition of Black Oil properties from field data	2
Reservoir fluid study: report, lab procedure and determination of fluid properties from reservoir fluid studies	3
Field Trip – Visit a commercial fluid laboratory	3
Examination #2	1
Evaluation of Black Oil properties from correlations: bubble point pressure, solution gas oil ratio, oil density, compressibility, viscosity and formation volume factor	4
Virtual Lab- evaluation of gas z-factor and analysis of leaks. Bubble point of live oil sample and phase envelopes	3
Surface separation calculations and equilibrium ratio correlations	3
Evaluation of oil field brine properties: salinity, bubble point, formation volume factor, density and solution gas water ratio, water isothermal compressibility and viscosity	2
Laboratory ^D determination of viscosity and surface tension of oil, gas and water samples _E	4
Examination #3	1
Conditions for hydrate formation and hydrate inhibition procedures	2
Cubic equations of state: solution of cubic equations, calculations with equations	2

of state	
Virtual Lab – differential vaporization and separator tests of live oil sample, hydrate formation and inhibition techniques	4
Final examination	1
Total	42

Evaluation method:

Homework

Laboratory

Major examinations

Final examination

Contributions to Professional Component

This course teaches the student the fundamentals of determination and evaluation of petroleum fluid properties, as well as the mathematical tools for the analysis and interpretation of data