

PTE 555 (Summer 2017)**Well Completions, Formation Damage and Well Stimulation****Units:** 3**Class Time:** Mondays, 9:00 am to 12:10 pm May 22 to August 7, 2017**Office hours:** Mondays, 1:30pm to 3:30pm, HED 302**Lecture Room:** OHE 132**Instructor:** Faruk Civan, Email: civan@usc.edu**Course Description**

This course will present a review of the background and techniques required for understanding, evaluating, and alleviating the well completions, formation damage, and well stimulation issues in petroleum and subsurface reservoirs.

Conduct of Course

The lecture durations are over 11 weeks, covering 9 weeks three-hour lectures including two one-hour midterm exams. The course is conducted as 1.5 hour lecture 10 min break and then a second 1.5 hour lecture. Materials will be introduced in lecture form. Emphasis will be placed upon practical understanding and implementation. Students will be provided with handouts and class notes. Selected SPE papers available at OnePetro and the online eBooks available at the USC library will be used. The selected parts of the online eBooks which will be covered in the course are indicated in the following course outline.

Learning Objectives

- Be familiar with the various well completion techniques and issue of practical importance
- Understand near-wellbore formation damage processes and their control and mitigation
- Review of well stimulation methods and applications for enhancement of well performance

Prerequisites: Graduate Standing in Petroleum Engineering**Co-Requisite (s):** None**Concurrent Enrollment:** None**Recommended Preparation:** Knowledge of fundamentals of reservoir engineering and production, petroleum reservoir fluids, fluid mechanics, *Excel spreadsheets* applications**Course Text Books and Materials:** (a) handouts, (b) class notes, (c) selected SPE papers available at OnePetro, and (d) selected parts from the following online eBooks available for the course at the USC library, as indicated in the course outline.

- **Civan, Faruk, Reservoir Formation Damage- Fundamentals, Modeling, Assessment, and Mitigation**, 3rd Ed., Gulf Professional Publishing, Elsevier, Burlington, MA, USA, ISBN-9780128018989, 1042 p., 2016.
- **Bellarby, Jonathan, Well Completion Design**, Volume 56, 1st Edition, Hardcover ISBN: 9780444532107, eBook ISBN: 9780080932521, Imprint: Elsevier Science, Published Date: 20th February 2009, 726 pages.
- **Oyenein, Babs, Integrated Sand Management for Effective Hydrocarbon Flow Assurance**, Volume 63, 1st Edition, Hardcover ISBN: 9780444626370, eBook ISBN: 9780444626387, Elsevier, 10th June 2015, 288 pages.
- **Renpu, Wan, Advanced Well Completion Engineering**, 3rd Edition, Gulf Professional Publishing ISBN: 0123858682 | July 25* 2011.
- **Smith, Michael Berry and Montgomery, Carl T., Hydraulic fracturing, Series: Emerging Trends and Technologies in Petroleum Engineering**, ISBN978-1-4665-6685-9, Electronic ISBN978-1-5231-0789-6, CRC Press, June 9, 2015, 812 Pages.

- **Syed A. Ali, Leonard Kalfayan, and Carl Montgomery, Acid Stimulation** (eBooks), SPE Monograph Series, Society of Petroleum Engineers, ISBN: 978-1-61399-497-9, Vol. 26, 305 pp., 2016.
- **Standard Handbook of Petroleum and Natural Gas Engineering (Third Edition)** Edited by: William Lyons, Gary J. Plisga and Michael Lorenz, ISBN: 978-0-12-383846-9, 2016 Elsevier Inc.

Grading

Homework	10%
Comprehensive Term Project	15%
Mid-term Exam 1	20%
Mid-term Exam 2	20%
Final Exam	35%

Statement on Academic Conduct and Support Systems

Academic Conduct

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Part B, Section 11, “Behavior Violating University Standards” <https://policy.usc.edu/student/scampus/part-b>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct>.

Discrimination, sexual assault, intimate partner violence, stalking, and harassment are prohibited by the university. You are encouraged to report all incidents to the *Office of Equity and Diversity/Title IX Office* <http://equity.usc.edu> and/or to the *Department of Public Safety* <http://dps.usc.edu>. This is important for the health and safety of the whole USC community. Faculty and staff must report any information regarding an incident to the Title IX Coordinator who will provide outreach and information to the affected party. The sexual assault resource center webpage <http://sarc.usc.edu> fully describes reporting options. Relationship and Sexual Violence Services <https://engemannshc.usc.edu/rsvp> provides 24/7 confidential support.

Support Systems

A number of USC’s schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* <http://ali.usc.edu>, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs* <http://dsp.usc.edu> provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information* <http://emergency.usc.edu> will provide safety and other updates, including ways in which instruction will be continued by means of Blackboard, teleconferencing, and other technology.