



The University of Texas at Austin
**Petroleum and Geosystems
Engineering**
Cockrell School of Engineering

Required Background Courses for MS or PhD Students:

Background courses are required so that all students who graduate from the Department of Petroleum and Geosystems Engineering at UT will have a basic and similar level of knowledge. Any exceptions to the rules listed below must be approved by the Graduate Advisor. Decisions by the Graduate Advisor may be appealed to the Graduate Studies Committee.

Background courses must be (or have been) taken for a letter grade with a minimum grade of C, as determined on a 4.0 scale.

Background courses can be taken at any university in the world, as long as the courses explicitly use the same words described in the background areas listed below.

Courses taken for a BS or MS may also count as background courses.

All graduate level courses taken as background courses can count towards the MS or PhD degree.

Students who have significant work experience in the petroleum industry can be exempted from some background PE courses, depending on their level of experience and job titles. Generally, students who have worked more than two years will be exempted in one area.

Students who take and successfully pass extensive short courses from a company sponsored education program or university course can also be exempted from that background area.

Students may also be exempt from some background areas if they have AP credit or if they have passed the Fundamentals Engineering (FE) exam.

Students are responsible for satisfying the background courses regardless of their previous degrees. You will not be allowed to graduate until you satisfactorily complete these requirements and provide official documentation of the courses you have taken.

There are three basic categories of background courses. Recommended courses that satisfy the requirements at UT are given in parenthesis in the lists below, although others are possible with the approval of the Graduate Advisor.

- **Background PE areas:** Drilling engineering (PGE381), well logging (PGE368 or PGE 385K), production engineering (PGE362 or PGE 383), reservoir engineering (PGE323 or PGE388) and geology (PGE382). Students are required to take one course in at least four of these five areas, for a total of four courses. Courses to be approved by Graduate Advisor.

- **Background Engineering areas:** Thermodynamics (PGE 326 or PGE 384), engineering mechanics or statics (EM 306), math (differential equations), chemistry (PGE 421K), and physics. The background engineering mechanics course can be satisfied if a student has an engineering course in continuum mechanics, solid mechanics, statics, engineering mechanics, dynamics, or fluid mechanics. Students must have one course in each of these areas, for a total of five courses. Courses to be approved by Graduate Advisor.
- **Writing area:** Students with a verbal score <500 (<152) on the GRE or TOEFL will be required to take a technical writing/communication course (PGE 393 or equivalent) as specified by the Graduate Advisor.

Below are some examples of actual student cases:

- **Example 1:** A student with a BS in mathematics and a MS in physics asks if his physics background will satisfy the thermodynamics background area. She points out that she took a course that contained material on the first and second laws in one of her physics courses. Decision: This student must take a thermodynamics course since the word “thermodynamics” is not in the course title on her transcript.
- **Example 2:** A student with a BS in mathematics and a MS in physics asks if his physics background will satisfy the engineering mechanics background area. He points to one course with the title “physical mechanics” and another that says “solid mechanics.” Decision: This student must take the engineering mechanics course because the words “engineering or statics” are not in the title.
- **Example 3:** A student has a BS and MS in petroleum engineering from China and has satisfied all background areas, except one. The student has not taken a thermodynamics course. Decision: This student must take a thermodynamics class.
- **Example 4:** A student has an engineering degree, but not in petroleum engineering. The student has satisfied all background engineering areas. Decision: This student is required to take one course in at least four of the background PE areas. This student also needs to take a writing course because of their low verbal score on the GRE.
- **Example 5:** A student has an engineering degree, but not in petroleum engineering. The student has satisfied all background engineering areas, but not the background PE areas. This student worked for Shell Oil for five years in petrophysics. Decision: This student is exempt from one background course in well log analysis because of their five years of work experience in that area. They must take one course in at least three of the remaining background PE areas.