

# Doctor of Philosophy in Petroleum Engineering

## Admission Requirements

- Students admitted to UND Petroleum Engineering Department as a graduate student have two options for PhD:
  - Master's Degree (in Engineering or a related field of study) to PhD
  - Bachelor's Degree (in Engineering or a related field of study) to PhD
- An overall undergraduate GPA of at least 2.75 or of at least 3.00 for the last two years.
- Graduate Record Examination General Test for those with undergraduate degrees from non-ABET accredited programs.
- Satisfy the Graduate School's English Language Proficiency requirements as published in the Graduate Catalog.

In addition to meeting the general provisions in the UND graduate catalog and the minimum requirements in items 1-2 above, candidates are assessed using a holistic process that considers Student's Record of Publications, GRE test scores transcripts of previous college work, relevant research and work experience, letters of recommendation, research interests, and English language skills.

## Degree Requirements

Students seeking the Doctor of Philosophy degree at the University of North Dakota must satisfy all general requirements set forth by the School of Graduate Studies as well as particular requirements set forth by the Petroleum Engineering Doctoral Program. The following requirements are in addition to the UND graduate school general requirements for the PhD:

- A minimum of 90 semester credits, including acceptable master's degree work and credits granted for the dissertation and the research leading to the dissertation. These 90 credits should include:
  - 30 to 48 semester credits of coursework taken from the approved list published by the Petroleum Engineering program. Other courses may be accepted with approval of the student's faculty advisor and the graduate director.
  - 30 to 48 semester credits of research.
  - 12 credits of dissertation.

2. Successful completion of a candidacy examination, taken at least one semester before defending the dissertation, and based on the following conditions:

### Section I

For candidacy, four general areas of their selected engineering track will be covered. Selection of the four general areas for this examination shall require the approval of the candidate's faculty adviser and the track-specific PhD. Graduate Director. Three results for each of the four sections of the examination can be obtained: 1) pass; 2) provisional pass; and 3) fail. Candidates obtaining a result of "provisional pass" for any section of the exam will be required to remediation of the topical area in which the provisional pass was received in accordance to stipulations specified by the examiner, with approval of the track-specific Graduate Director. Candidates who fail one or more sections of the exam will be allowed one opportunity to repeat that section of the exam. The reexamination must take place no later than one full semester after the initial examination attempt. A direct admit student who fails an exam a second time may request to be reclassified as a master's student and complete a track-appropriate Master of Science degree and then reapply to the Doctoral program.

### Section II

A detailed written doctoral research proposal must be submitted to the committee. The proposal should cover:

- a literature review of the relevant field of research related to the project
- proposed methods
- preliminary results (simulation or experiment)
- the objectives of the proposed project, and
- tasks and the timeline of the proposed research in a Gantt chart.

The report should be reviewed and approved by the student adviser.

Each of the above components will be evaluated and graded (0 to 100). To pass the written exam, student should earn a minimum of 75/100 in each category. All grades from student committee members will be averaged to determine a grade in each category.

If the report earns a passing grade a date can be scheduled for an oral presentation (i.e., Section III). If failed, student has the opportunity to revise and resubmit the report to the committee for re-evaluation.

### Section III

- Each semester an oral progress report should be presented to the department chair and the adviser through the Academic Performance Meeting (APM). A part of these presentations will include details on the dissertation research progress and plan. Any deviation from the approved research objectives as stated and documented in the research proposal must be approved and justified by the committee. If satisfactory progress is not observed by the adviser and department chair through these presentations, student will be informed in a notice for termination. If the adviser and department chair are not satisfied in the following APM, student will be terminated.
- A candidate for the degree must complete the original basic research investigation as documented in the research proposal. Each candidate will complete the research investigation to the satisfaction of the research adviser and the advisory committee and will prepare a written dissertation covering the research. The project must represent an original and independent investigation by the student. The candidate will submit the dissertation to the examining committee at least three weeks prior to defense date. Student's committee members are added upon the advisor approval.
- The candidate must present and successfully defend the dissertation at the final examination (see School of Graduate Studies requirements (<https://und.edu/academics/graduate-school/>)). The dissertation defense session can result in four outcomes: 1) pass; 2) minor revision 3) major revision and 4) fail. For minor revisions there is no need for another defense session and upon revising the dissertation the examining committee can pass the student. For major revisions the student is asked to fundamentally revise the methodologies and schedule another defense session. If failed, the student will not be able to obtain a PhD degree and may request to be reclassified as a master's student and complete a Master of Science degree.
- It is expected that the results of the research will be submitted for publication in refereed research journals. At least two peer reviewed ISI (Institute for Scientific Information) journals (as the first author) and two peer reviewed conference papers (as the first author) submitted with the consent of adviser prior to the defense. This requirement can be waived by the adviser's approval based on the research and dissertation content.