

Masters Examination Milestones

Craft and Hawkins Department of Petroleum Engineering

This document defines expectations of student achievements at various points in the Master of Science (MS) program in Petroleum Engineering at Louisiana State University.

A. Thesis Option

The student must demonstrate proficiency in research or applying advanced technology to petroleum engineering. The student's degree plan, determined by the student and the advisory committee, consists of courses that ensure professional competence and enhance research productivity in petroleum engineering.

1. **Thesis Proposal** The student must present a project proposal to the advisory committee. The proposal is no later than the third semester after admission to the master program. To pass the proposal examination, the candidate will:

- 1.1. define the problem, and state the engineering, science, economic, and/or social motivations for a solution
- 1.2. read, understand, and summarize the most important previous work in the area
- 1.3. place the proposed plan in a meaningful context with petroleum engineering
- 1.4. formulate a credible approach for carrying out the project and identify tools (analytical, numerical, laboratory instrumentation, and equipment) to be used
- 1.5. provide a detailed plan for the project, including a timeline
- 1.6. submit a written proposal and/or formally present an oral proposal, the format(s) to be chosen by the candidate in consultation with the thesis committee.
 - 1.6.1. If submitting a written research proposal, the proposal will be sent to the committee at least a week before the examination. The written proposal should be 3-15 pages excluding references and include items discussed in 1.1-1.5. The written proposal is a working plan for the project, agreed upon by the student and the dissertation committee.
 - 1.6.2. If making a formal oral proposal, the candidate will announce the proposal session to all department faculty and graduate students one week in advance. Upon committee members' request, copies of the slides (subject to revision) must be provided to the committee at least one week in advance. Notes from the proposal, compiled by the candidate and committee, are a working plan for the project research and/or augment the written proposal.
- 1.7. demonstrate a commitment to clear communication

2. **Final examination** The final examination focuses on the thesis topic, ensuring that the work is of sufficient scope, difficulty, and creativity to merit a MS. The final examination is (a) generally within two years after admission to the MS program, and (b) no later than three years after admission to the MS program. The candidate will:

- 2.1. state the problem clearly and convincingly, identifying the elements of the problem and approach that are creative, challenging, and/or original.
- 2.2. review relevant literature completely and informatively.
- 2.3. Complete a project that contributes to petroleum engineering science and/or technology and/or applies advanced engineering or scientific methods to address a challenging problem, and/or is a new application of existing methods.
- 2.4. compare, benchmark, verify, calibrate, and/or validate results against alternative and existing solutions, techniques, and datasets.

- 2.5. demonstrate mastery of the tools used.
- 2.6. prepare a properly formatted thesis and presentation and submit the thesis to the committee at least two weeks before the examination. Copies of slides, subject to revision, should be submitted to the committee one week before the examination.
- 2.7. communicate clearly, including answering questions well.
- 2.8. announce the examination to all department faculty and graduate students one week in advance.

B. Non-Thesis Option

The non-thesis degree option increases the student's professional knowledge of and proficiency in applying petroleum engineering technology. The student's degree plan, determined by the student and the advisory committee, comprises courses that ensure professional competence and engineering productivity.

Final examination

A final examination is required, and ensures that the student has developed the requisite level of knowledge and proficiency. The final examination is comprehensive and is broader in scope than a thesis-based examination. The examination is administered by the student's advisory committee. The timing of the final examination is usually during the student's last semester of course work.

The content of this exam may be based upon one of the following options

- a. A presentation of an independent project conducted to acquire or apply graduate level knowledge in a specific subject area, e.g. for a PETE 7256 independent study; this is the preferred option.
- b. A presentation of a project beyond coursework using knowledge from courses, summer internship or personal experience
- c. An oral exam by the committee including challenging, specific technical questions in each of the four major subject areas of petroleum engineering (well drilling and completion, production, reservoir engineering, and formation evaluation).

If the general exam includes a presentation (Options a and b) the candidate is expected to:

- state the problem clearly and convincingly, identifying the elements of the problem or approach that are significant
- review relevant literature completely and informatively
- explain the solution(s) and its (their) significance
- demonstrate mastery of the technical tools used, and an understanding of petroleum engineering concepts related to the topic

Students who choose not to report on a particular project (Option c) shall demonstrate:

- understanding of engineering principles of well drilling and completion, production, reservoir engineering, and formation evaluation
- proficiency in two of the four subject areas above
- knowledge of petroleum engineering processes, equipment, and terminology.