

# Ph. D. program in Physics at SMU

## Written core proficiency exam

### CURRENT POLICIES – JANUARY 2019

The policies described here were approved in a series of votes by all physics faculty in 2011, 2017, and 2018.

#### **PURPOSE OF THE CORE PROFICIENCY EXAM (CPE)**

Our CPE serves several purposes. First, the CPE encourages the students to review and consolidate their knowledge of basic physics. Second, it ensures that the students that are clearly unprepared to continue to a PhD do not remain in the program for more than two years. Third, passing the CPE awards a Masters degree to the student, but does not guarantee that any faculty member will agree to supervise a student for a PhD. Finally, the CPE can serve as a flag for students whose skills in some subjects are marginal and should be remedied.

#### **POLICIES**

1. The CPE follows the university policy on Ph. D. qualification exams available in the SMU Graduate Catalog.
2. The CPE consists of four sections testing on the knowledge of classical mechanics, electrodynamics, quantum mechanics, and statistical mechanics. The exam is proctored. (No open-ended exams.) Each section is to be completed within two hours. The proctor has a discretion to add more time on the exam if necessary. The preparers of each subject exam are responsible for proctoring.
3. The test level is advanced undergraduate. We will provide an example of one or two undergrad texts for each subject to the students and preparers in order to identify the exam level and possible topics.
4. Open or closed book is at the discretion of the preparers. The preparers tell the students the rules for the specific exam as early as possible (several months, at least).
5. Examples of previous questions (but not solutions) are made available on our web site beforehand (several months in advance).
6. Each subject committee will have three faculty.
7. Each exam with solutions must be prepared at least one week before the test in order to ensure that the test has been timed, and the questions are soluble. We further recommend that each proposed problem be solved by a committee member under conditions approximating the actual exam, but leave the details of preparation and checking of questions to each committee.
8. Preparers grade their exams within a week of the test, and the department announces results shortly (within several days) thereafter.
9. Students must pass all four sections and may retake individual sections once without retaking the entire exam.

10. We will offer all exams on a regular annual schedule at the beginning of winter semester, just as classes begin.
11. The department will save the actual exams, though the students may look at them after they're graded. Grading is in principle pass/fail, though for the sake of the students and accreditation, it is useful for the grading to be somewhat detailed, with a score that reflects the percentage of the material of which the student demonstrated mastery.