

Proficiency Exam Policies *Effective Fall 2022*

Students earning a thesis-based MS degree in chemistry require a broad, fundamental knowledge base in chemistry on which to build their specialized advanced degree. To this end, MS students must demonstrate proficiency at the advanced undergraduate level in three subfields of chemistry or biochemistry. The three subfields are selected by the student in consult with their advisor prior to beginning the MS program.

Proficiency is evidenced in one of two ways:

1. *Through examination:* Satisfactory performance on an exam covering the subfield.
2. *Through relevant coursework:* Completion of the relevant NAU course while in the MS program, with a grade of B or better.

Exams are given in six areas, listed in Table 1. Students must pass three exams as follows:

- one in their emphasis area (area most relevant to their research, selected in collaboration with advisor)
- two in non-emphasis areas (subfields related to their research, selected in collaboration with advisor)

Table 1. Proficiency exam areas and related courses.

Proficiency Exam Area	Relevant Course	Term(s) Course is Offered
Analytical	CHM 320	Fall, Spring
Biochemistry	CHM 360	Fall, Spring, Summer
Inorganic	CHM 350	Fall
Organic	CHM 238	Fall, Spring, Summer
Physical – dynamics	CHM 341	Fall
Physical – quantum	CHM 442 / 540	Spring

Table 2 lists **sample** values set by the Graduate Committee that constitute a passing score for the available exams. The values below may differ upon the specific exam version taken by the student and the values below are provided only for guidance.

Table 2. Sample maximum and passing scores for each proficiency exam area.

Proficiency Exam Area	Maximum Score Possible	Sample Passing Score*
Analytical	50	23
Biochemistry	60	31
Inorganic	60	29
Organic	70	35
Physical – dynamics	100	61
Physical – quantum	100	60

* *These values may be modified by the Graduate Committee based on changes to the exams administered or student performance norms. Consult the Graduate Coordinator for the most up-to-date passing scores.*

Upon admission into the program, the student will complete the Proficiency Exam Plan form with their advisor to indicate the three subfields in which they will demonstrate proficiency. **Incoming students must take three exams at the beginning of their entry into the program (August or January, prior to the start of classes) and are expected to pass at least two.** Students should plan to spend at least 2 to 3 months preparing for these exams before they arrive on campus. Failure to pass at least two exams will require remedial coursework (see below). This will slow down completion of the MS degree and may impact assistantships or other support.

In the event that one or more exams are not passed, students will update their Proficiency Exam Plan form with their advisor to reflect the following:

0 exams passed: *Student is placed on academic probation.* Students are strongly advised to enroll in at least two of the relevant undergraduate courses (determined by the advisor) at the next available term and may not be allowed to enroll in graduate course(s) in the corresponding subject area(s). Students must pass both courses with a B or better OR pass two proficiency exams at the end of that semester. Failure to meet proficiency for two areas before beginning their third semester will result in dismissal from the program.

1 exam passed: Students are strongly advised to enroll in at least one of the relevant undergraduate courses (determined by the advisor) at the next available term and may not be allowed to enroll in a graduate course in the corresponding subject area. Students must pass this course with a B or better OR pass the proficiency exam in that subfield at the end of that semester. Failure to meet proficiency for that area before beginning their third semester will result in dismissal from the program.

2 exams passed: No remedial courses are required but a course may be recommended by your advisor.

A student must demonstrate proficiency in two areas before beginning their third semester or they will be dismissed from the program. Students must demonstrate proficiency in all three areas before they are allowed to defend their thesis.

When demonstrating proficiency via examination, each exam may be taken only three times. After taking an exam two times, the student will be placed on academic probation. If a student fails an exam three times, they will be dismissed from the program.

Proficiency exams are offered three times a year:

- (1) August (before the start of Fall semester)
- (2) December / January (at the end of Fall semester and before the start of Spring semester)
- (3) May (at the end of Spring semester)

The ACS Examinations Institute has [study guides and practice exams](#) for Organic Chemistry, Physical Chemistry, and Analytical Chemistry available for purchase that may be useful in preparing for proficiency exams in those areas.

Students earning a thesis-based MS degree in chemistry through the Accelerated program are also expected to demonstrate proficiency in three subfields of chemistry, as described above. Because they are enrolled concurrently in the BS and the MS program at NAU, students in the Accelerated program will be enrolled in courses in the proficiency areas to fulfill their undergraduate degree requirements. When students pass the courses with a B or better, they demonstrate proficiency in those areas.

Upon matriculation into the Accelerated program, students will complete the Proficiency Exam Plan form with their advisor to indicate the three subfields in which they will demonstrate proficiency. The Graduate Committee will consult the student's transcript to determine if proficiency is met in each of the three selected subfields. If a student earns a C or lower in any of the three selected areas, the Graduate Committee will require the student pass the corresponding proficiency exam(s). All policies for the proficiency exams described above apply.