Senior Assessment Graduation Requirements

In addition to completing all course and university requirements, candidates for a B.A. or B.S. in Mathematics\Applied Mathematics (including the Teaching Licensure track) must successfully pass the following two assessments as part of the University’s graduation requirement for candidacy:

1. Student Portfolio
2. Exit Interview

Major Portfolio Guidelines

Rationale for portfolio: The primary goal in asking students to assemble the portfolio is to encourage them to reflect on their mathematical flexibility and growth, and to help them focus on their mathematical interests. Selecting the items for inclusion requires students to review the work they have completed, to think about its mathematical value, and to observe how they have matured mathematically.

The portfolio will include four sections:

- Introduction
- Core Section
- Concentration Section
- Capstone Section

The Products/Evidences
In each of the three main sections, candidates will present Products (documents and artifacts) that give evidence of expertise in that area. The products will be of the candidate’s own choosing, with guidance from the candidate’s advisor or other faculty mentor. The intent is that each portfolio be a personal, distinctive statement of the candidate’s achievement.

- While many of the documents and artifacts will come from coursework, others may come from consulting, research or internship settings.
- You may use clean copies of any products that were graded as part of a course free of instructor comments and grades. Of course, if you only have the graded copy of the assignment, that may also be acceptable.
- While dates are not required on products, the course in which the product was created MUST be identified by catalog number on the front cover page of the product.
- The emphasis certainly is not on the number of products, but on how well the product provides evidence of expertise in the area in which it is cited and support for the point the writer is making.

The portfolio is intended to provide a thread that ties together coursework and its application. Therefore, candidates should avoid the tendency to consider the portfolio a collection of “best papers” from classes. The emphasis should remain on application, integration, and synthesis throughout.

Portfolio Deadlines:
Portfolios must be submitted to the Program Assistant in Duke 209 no later than:

February 15th for May graduation
October 1st for January graduation

Mathematics Senior Assessment Guidelines—May 2013
Portfolio Development and Evaluation
Portfolios will be assessed independently by two faculty evaluators from Elon or another university. Candidates will be notified of the results of their portfolio evaluation no later than March 15th for May graduation, and November 1st for January graduation.

- Candidates must receive a rating of P (pass) on each section from each evaluator including the introduction.
  - If one or more sections receive a rating of F (fail), that section may be resubmitted once. It then will be re-evaluated by a faculty committee named by the chair of the Mathematics and Statistics Department.
  - Should a section receive a failure on the resubmission, the candidate will not be eligible to graduate.
- If a rewrite is necessary, revised sections must be resubmitted no later than the second Friday after notification. A final decision regarding whether the candidate will be eligible to graduate will be made during the following week.

Though re-evaluations are built into the procedure, candidates should understand that an unsatisfactory rating indicates a serious weakness and their graduation is put on hold until the weakness is remedied.

Compilation
Portfolios must be compiled into a black maximum 1.5-inch clear front view binder with candidate information, including the candidate’s name and major, identified on the front, and side spine. Candidates must use sheet protectors for their documents—no more than 2 sheets placed back to back in each protector sheet.

The formal presentation for the portfolio should follow the sequence below:
- Table of Contents
- Section Divider One with title “Introduction”
  - First entry: cover letter
  - Second entry: resume
  - Annotated list of courses taken for your major
- Section Divider Two with title “Core Section”
  - First entry: Your rationale which should be a maximum of 3 page Introduction\Reflection on the rationale for choosing the documents that you included, reflecting on pieces that you are particularly proud of and how you would make improvements.
  - Second entry: The most meaningful assessment from each of the “core” courses from the student’s major program. (At least 3 evidences, one from each of the following: a calculus course, Math Reasoning\Discrete, Linear\Matrix Theory). This could be a test, problem set, or other graded assessment from each course.
  - Third entry: A document that reflects on one concept (theorem, definition, algorithm) from each of the “core” courses that you find especially meaningful. This reflection should state the concept(s) that you choose and why they are especially meaningful to you.
- Section Divider Three with title “Concentration Section” (Pure or Applied Math)
  - First entry: Your rationale should be a maximum of 3 page Introduction\Reflection on the rationale for choosing the documents that you include, reflecting on the piece that you are particularly proud of and how you would make improvements.
Second entry: Include one of the following, based on your major, from courses not included in the Core Section but in your major

- Pure -- A mathematical proof of your choice, which you generated, that highlights a good mathematical argument
- Applied -- A mathematical model of your choice, which you generated, that highlights a good mathematical argument (made in either a math or allied field course)

Section Divider Four with title “Capstone Section”

First entry: Your rationale should be a maximum of 3 page Introduction/Reflection on why you chose this capstone, what was the added value from the capstone, and connections between the chosen capstone documents and prior experiences

Second entry: Capstone Document with reflection (this could be one of the following)
  - Senior Seminar or Research Paper
  - Final Internship Reflection Paper
  - Unit Plan from Methods Course (with reflection related to math content knowledge)—this option open to mathematics with teaching licensure students only

Third entry: Other Product(s) formal shared either through publication or presentation.

NOTE: Candidates must complete their capstone experience at least 1 full semester before intended graduation date so that the required products can be included in their portfolios. Thus to graduate in May, the capstone experience must be completed no later than Winter term to meet the February portfolio deadline. Similarly, for January graduation the capstone must be completed no later than summer to meet the October deadline.

For help on portfolio development, candidates should contact their mathematics advisor or appointed faculty member in the Mathematics and Statistics Department. There is also a 1-hour co-operative education course, COE 310 class that is offered in some fall semesters that some candidates may find useful.

Because portfolios are to be both personal and distinctive, we do not provide a complete list of required products. Instead, we provide a set of program learning objectives for each section of the portfolio that should serve to guide candidates in product selection and in the writing of their rationales. It is important to note that these program learning objectives represent the indicators of expertise in each section, and they are what the readers of the portfolio will be looking for in their evaluation of rationales and product selections. **If a specific product is required within a section, it is so indicated.**
Section 1: Introduction
The introduction section must contain:

1. Cover letter. This letter should be addressed to a prospective employer or graduate school depending on the candidate’s post-graduation plans.
2. Resume. A detailed resume in support of post-graduation activities is required.

- Entries should show evidence that the candidate can produce materials that are consistent with standard professional format, well-articulated goals and well-developed plans.

Section 2: Core Section
Candidates will be able to

1. Demonstrate sufficient mathematical ability and the ability to reflect on the problem solving process.
2. Explain mathematical concepts that are meaningful in the core.

Rationale - provides a reflective statement which provides a clear reasoning for including each product as evidence of the candidate’s expertise in this area, giving particular emphasis to how expertise has increased as a result of coursework experience.

- Entries should show evidence that the candidate understands the role of mathematics as a science.

Candidate must indicate specifically what portion of the product provides the evidence and how it illustrates the point the candidate is making. For example, if the candidate writes that Product A demonstrates computing ability, the candidate should clearly indicate where and how ability is demonstrated in the product. Finding the candidate’s reference to computing ability is not the responsibility of the reader. Candidates should be sure to discuss the relevance, if any, of this area and related experiences to their future plans.

Required Product: Each candidate is expected to present at least 3 evidences, one from each of the following: a calculus course, Math Reasoning\Discrete, Linear\Matrix Theory that demonstrate an understanding of the core. In separate documents each candidate must present a document that reflects on one concept (theorem, definition, algorithm) from each of the “core” courses that you find especially meaningful. This reflection should state the concepts that you choose and why they are especially meaningful to you.
Section 3: Concentration Section

Candidates will be able to

1. Give a thorough explanation of problem solving related to the concentration.
2. Exemplify a clear mathematical argument relative to the concentration.

Rationale - provides a reflective statement regarding the nature of content expertise in the concentration area and clear reasoning for including each product as evidence of the candidate’s expertise in this area, giving particular emphasis to how expertise has increased as a result of the concentration area experience.

Candidate must indicate specifically what portion of the product provides the evidence and how it illustrates the point the candidate is making. For example, if the candidate writes that Product D demonstrates the use of a disciplinary principle (for example, an argument based on the inductive process), the candidate should indicate *what* the principle is, and *how* it is used or discussed in the product. Finding the principle and determining how it is used is *not* the responsibility of the reader. Candidates should be sure to discuss the relevance, if any, of this area and related experiences to their future plans.

Required Product: Evidences in this section should come directly from the candidate’s concentration area. The focus of this area is problem solving\mathematical arguments in the concentration area. Students should focus on highlighting these through chosen evidences and reflection.

Section 4: Capstone Section

Candidates will be able to

1. Discuss mathematical thinking related to their capstone experience.
2. Display knowledge and independent thinking related to capstone experience.

Required Product: Evidences in this section should come directly from the candidate’s capstone experience. The focus of this area is application of knowledge, communication of knowledge, and independent thinking. Students should focus on highlighting these through chosen evidences and reflection.
Math\Applied Math Major Exit Interview Guidelines

An oral exit interview will be administered by at least two Elon faculty from the Elon Mathematics and Statistics Department, during the students’ senior year. The purpose of the interview is to judge the candidate’s ability to discuss and interpret factual material relating to mathematics and its applications. Students will be graded on a Pass/Fail scale and will have an opportunity to re-take the interview in the event of failure.

Interview Format

- Exit interviews will be approximately 30 minutes in length.
- Candidates will be asked to discuss the mathematics reported in any of the products that were included in their submitted portfolio.
- Candidates will be asked to orally explain mathematical ideas, methods or results as if speaking to a non-mathematical audience.
- Students will NOT be informed of the product choices before the interview so should familiarize themselves with all their submitted products.
- At the end of the interview, candidates will be asked to complete a senior student survey in which they rate their confidence in the skills related to the program learning objectives. Student feedback on the major program, teaching effectiveness, advising and offerings will also be sought.

Interview Deadlines:

Interviews must be scheduled with the Coordinator (to be defined) between:

- March 16th and March 30th for May graduation
- November 2nd and November 16th for January graduation

Candidates will be notified of the results of their interview no later than April 1st for May graduation, and November 18th for January graduation.