

# Contents

## MAT 4040: Senior Capstone on Gender and Mathematics

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### 1.1 Catalog Description

MAT 4040 satisfies the general education capstone requirement for mathematics majors with concentrations other than education. Students will explore current, relevant, or advanced undergraduate topics in mathematics and the relationships of mathematics with other fields. Oral and written communication skills are emphasized. Prerequisites: either MAT 3110 or MAT 3220, and senior standing in mathematics or permission of the instructor.

### 1.2 Learning Goals, Activities and Grades

*understanding responsibilities of community membership*  
*communicating effectively*  
*thinking critically and creatively*  
*making local to global connections*

#### Learning Goals

- research, analyze and reflect on discipline-specific materials. Lauren Murray will continue exploring her prior S-STEM research on gender and mathematics. The idea is that Lauren Murray will see connections of mathematics and statistics to other academic fields of study, humanistic perspectives, and its relation to the global mathematical community and society in general.
- write effectively in formats appropriate to an advanced level of the discipline
- document correctly in the conventions of the discipline
- reflect on your own development in the areas of thinking critically and creatively, communicating effectively, making local to global connections, and understanding responsibilities of community membership, which are the four general education goals at Appalachian

#### Critical and Creative Thinking & Local to Global Connections

We will engage in increasingly sophisticated research activities, which include connections to the global mathematical community. The readings, reflections and research project will focus on critical thinking and creative products. You will focus on collecting and analyzing information, and recognizing scholarly versus other types of sources.

#### Communicating Effectively & Understanding the Responsibilities of Community Membership

You'll meet with me each week discuss your progress. ASU's General Education Program prepares students to employ various modes of communication. Successful communicators interact effectively with people of both

similar and different experiences and values. We will also practice written work in homework assignments and the project. As per the University-wide Statement on Student Engagement with Courses you can expect to spend (on average) 2–3 hours outside of class for each hour in class. Homework during some weeks may take less than this time—your other time should be spent on the course project. Academic integrity is a fundamental part of the course, which includes meeting deadlines, participating in our capstone community, and giving proper reference where it is due. These are essential to course integrity.

### 1.3 Tentative Schedule

Week 1: Introduction to the capstone project and careers in mathematics

Week 2: Research on gender in mathematics

Week 3: Research on gender in mathematics

Week 4: Scholarly peer-reviewed sources

Apply for the Association for Women in Mathematics (AWM) Conference for Students

Week 5: Part 1 of the capstone project

Saturday 2/17: AWM Conference for Students at UNC Chapel Hill <http://awmch.web.unc.edu/conference/>

Week 6: Preliminary bibliography

Week 7: Good Mathematical Writing

Week 8: Capstone survey

Week 9: Continue research

Week 10: Professional typography and work on first draft

Week 11: First Draft is due

Week 12: Read my comments and use them to improve your draft

Week 13: Second Draft is due

Week 14: Read my comments and use them to improve your draft

Final Exam Period: Capstone Project is due as a printed copy by Thursday May 10 at 2pm

### 1.4 Grades and Rubrics

We'll be engaging in standards-based learning, where success is tied to meeting specific learning goals in assignments, rather than a percentage correct or point system. This will allow you (and I) to identify strengths and weaknesses early in the class and you'll have multiple chances to revise work in order to succeed. We'll employ Star Wars terminology as a metaphor—Padawans are training to one day become a Jedi. Jedi Knight is a rank within the Jedi Order, referring to Jedi who complete their training and pass the Jedi Trials to become full members. A C grade means that at least half the work has been completed at the Jedi Knight level or higher\*\*\*\* and the rest a good-faith attempt. You can think of a Jedi Master as a leader who has demonstrated exceptional achievement by generally demonstrating all of the goals, and earned an A. To earn a B complete Jedi Knight (C) requirements plus half way to Jedi Master (A). A D is halfway to the C range.

Course Rubric	missing	Padawan still training	Jedi Knight C	Jedi Master A
I attend meetings regularly and positively participate in our research community				
I can make a good faith effort in research, readings and reflections to satisfy learning goal a).				
I can turn in a quality research project in gender and mathematics for the capstone project rubric and learning goals a)–c).				
I can complete the course survey to satisfy learning goal d).				

\*\*\*Accommodations in the determination of the final grade will be made for extenuating circumstances, such as those that are documented to prevent you from turning in work early or on time, including the level of achievements in the learning targets.

Capstone Project Rubric	missing	Padawan still training	Jedi Knight S	Jedi Master A
			generally demonstrates	thoroughly demonstrates
<b>The document is in a professional format, using quality typography.</b> Consistent style Flow Professional mathematical notation Appropriate use of technology Discussed the mathematics in student's own words Quality and creativity				
<b>The document includes appropriate references.</b> Gave proper reference Consistency in citations Used appropriate references				
<b>The writing integrates depth via the extent of the connections or the mathematics.</b> Research, analyze and reflect on discipline-specific materials. Lauren Murray will continue exploring her prior S-STEM research on gender and mathematics. The idea is that Lauren Murray will see connections of mathematics and statistics to other academic fields of study, humanistic perspectives, and its relation to the global mathematical community and society in general. Mathematical connections				
Introduction Why did you choose this topic? Connections to other class(es), if any				
Literature Review				
S-STEM and Additional Research				

## 1.5 Required Resources and Materials

- You will need regular online access to ASU Learn and the library webpage. You can access these on and off campus (some require your ASU login).
- You will need printed copies of certain work.

## 1.6 Academic Affairs Policies

We adhere to the University-wide syllabus and policy statements:

<https://academicaffairs.appstate.edu/resources/syllabi-policy-and-statement-information>

## 1.7 Advice from Previous Students

- It is easy to forget about it. Block a regular time in your schedule for homework.

- Make sure the topic you choose for the course project is something you are interested in. If it isn't, you can change it at the end, but it is better to choose something good from the beginning.
- I had fun with the readings and activities. The reflections are as interesting as you make them.
- Remember that some weeks will have less homework than others. Spend any spare time on the course project so that your last weeks of class are not too crazy. The workload overall was fine.
- Dr. Sarah has set up the course project to be completed in steps to help you. Take advantage of these and her help. I hadn't realized that I could bring coding problems in to her office hours.
- Do not procrastinate and keep a regular checking period of the syllabus.

## 1.8 Where to Get Help and Additional Policies

My office hours are in 326 on Monday 12:30-1:45, and Tuesday/Thursday 12-1:45. Check ASULearn often for homework. ASULearn is the easiest way to ask a question outside of class and office hours. You are also responsible for all assignments and announcements made on the web pages, so check them often. I prefer that you use office hours since it is easier to discuss material in person, but if you can not make them, then ASULearn is a great alternative. If the university cancels classes, check the web pages for updated info, as we may meet by videoconference and homework may still be due. Snapshots from your phone attached onto the private ASULearn forum are acceptable, for example. If there is some reason you must miss a deadline, then keep me informed, with any appropriate documentation, and turn the work in early or on time, if at all possible. I encourage you to talk to me often in office hours, and on the ASULearn forums and I am always happy to help. I also want you to be informed about your choices regarding what you tell me about certain types of sensitive information. In situations where students disclose experiencing an act of interpersonal violence to their instructor, faculty are required to report what students tell us to the campus Title IX Coordinator, who then reaches out to the student by email offering support services. I care about you and want you to get the resources you need. I'm happy to talk with you if you decide you want that, but please be aware that if instead you'd like to explore options with someone who can keep your information totally confidential, I highly recommend the Counseling Center at 828-262-3180. They offer walk-in hours as well as after-hours coverage: <http://counseling.appstate.edu>.

- Appalachian Cares is a place to find updates about matters of student health and safety. It also functions as the most up-to-date clearinghouse of information, resources and support available. <http://appcares.appstate.edu/>.
- The University Writing Center (UWC) offers free services to students, faculty, and staff of Appalachian State University and the Boone community: <http://writingcenter.appstate.edu/>
- The library offers Research Advisory Program (RAP) sessions. <http://library.appstate.edu/gethelp/rap>
- The Learning Assistance Program provides five core services. Two services, University Tutorial Services and Academic Strategy Instruction, are offered to all undergraduate students, and three services, ACCESS, Student Support Services, and Academic Services for Student Athletes, serve specific groups of students identified as needing comprehensive support. In Fall 2016, the ASU-R program joined the Learning Assistance Program. <http://lap.appstate.edu/welcome-learning-assistance-program-1>
- AppSync is your one-stop connection to engagement and leadership opportunities at Appalachian State. <https://appsync.appstate.edu/>

You should explore the course material and write out your thinking in a way that can be shared with others. Be sure to give acknowledgment where it is due. Submitting someone else's work as your own (PLAGIARISM) is a serious violation of the University's Academic Integrity Code, which defines: "Plagiarism includes, but is not limited to, borrowing, downloading, cutting and pasting, and paraphrasing without acknowledgement, including from online sources, or allowing an individual's academic work to be submitted as another's work."

## 1.9 Acknowledgements

Star Wars <sup>TM</sup> and © Lucasfilm Ltd., Twentieth Century Fox, Walt Disney and its companies. For educational use only. I adapted the idea from my friend Amy Ksir at the Naval Academy.