Ma 481 ~ Capstone Experience in Mathematics II

Spring Semester 2023-2024

Instructor:	Dr. Melissa Gardenghi
Office:	Alumni 38
Office Hours:	Daily by appointment, see https://calendly.com/mgardeng/20min
Preferred Method of Communication:	MS Teams; personal correspondence by personal chat and general course/content related questions in the course general channel
Email:	mgardeng@bju.edu
Course Website:	https://math.bju.edu/ma481/

Catalog Description: Required of all students majoring in Mathematics. An independent study of an advanced mathematical topic resulting in a written and oral presentation. Not applicable toward a minor.

Course Context:
This course supports the following learning outcomes of the mathematics program:

MM1: Progress logically from premises to valid conclusions in a variety of mathematical contexts.

Course Goals:

CG1: Develop mathematical maturity and independent thinking.
CG2: Learn to read and digest mathematical literature.
CG3: Learn to evaluate mathematical works to determine their value and application.
CG4: Improve the student's ability to communicate mathematics to others, both orally and in written form.

Course Objectives: The student will be able to:

1. Independently learn an advanced mathematical topic. (Assessed through periodic meetings and the written and oral reports)
2. Communicate his knowledge and methods in an informal setting to a group of his peers (Assessed during weekly group meetings)
3. Present the learned material at a conference/symposium or to a client. (Assessed by the oral presentation)
4. Present a written report of the material learned using appropriate mathematical language and formatting. (Assessed by the written report)

Course Participation/Attendance Requirements:

- Attend at least one math talk per month
- You will set up a time for a weekly meeting with your faculty research mentor. Attendance at these Mentor Meetings is mandatory (unless other arrangements are made with your mentor).
- You will meet with the Research in Mathematics Group for at least 30 minutes per week if there is more than one student enrolled in Ma 481. Attendance at these meetings is mandatory. Group Meeting times to be decided by the professor.

Course Requirements and Evaluation:
Research Benchmarks:

- Week 1 (no later than mentor meeting in Week 2) – Proposal for Research (5% of final grade)
    - Under consultation with the faculty mentor, the student will submit a proposal outlining the scope, schedule (which must satisfy the following requirements), and deliverables of the research for the semester.
    - Once the faculty mentor accepts/approves the student's Proposal for Research and Grading Scheme, the Proposal for Research will be considered binding on grades for this course.
- Week 4 (by end of week) – Example Draft: written component demonstrating writing style in mathematics (10% of final grade)
- Week 8 (by mid-week) – Midterm: substantive amount of writing, should also include a formative assessment of formal oral presentation skills (10% + 5% = 15% of final grade)
- by Week 14 (by end of week) – final draft of paper (50% of final grade)
- by Week 15 (as announced) – formal presentation of findings (20% of final grade)
- other benchmarks as determined by client or conference schedule.

Grading Scale: Standard 10-point scale.

Office Hour Appointments:

Office hour appointments can be made using the Calendly site (appointments may be made up to two weeks in advance), https://calendly.com/mgardeng/20min. If there are no available times at which you are able to meet, send Dr. Gardenghi a message including some days/times between 7:30am and 3pm when you are available.

General Policies:

1. Compliance with student handbook policies is expected during class. The classroom is to be a professional environment. That means your attention is expected to be on course related material, and you are expected to positively contribute to the class. I reserve the right to ask you to leave class should your attention be elsewhere (sleeping, surfing the internet, working on assignments for another class, etc.).
2. Absence/Late Policy:

    - Missed Mentor Meetings (without prior approval) or missed Group Meetings (without prior communication) will result in an absence being reported to the Office of the Registrar. Students are allowed 1 personal absence and 1 service absence for the semester.
        - By mutual consent, the mentor and student may replace a Mentor Meeting with MS Teams communication about student progress -- not more than once per month. This will not be reported as an absence unless communication does not occur.
        - By faculty decision, a Group Meeting may be canceled – not more than once per month. This will not be reported as an absence.
    - Written assignments/projects are penalized at 15% off if turned in within 3 calendar days of the due date and are a 0 after that. Oral presentations are a 0 if not presented on the day assigned without prior approval.
    - Missing work will receive a 0.

    Exceptions may be granted by your professor in emergencies. Contact your professor asap by Teams to notify them of the emergency.

3. University academic integrity policy is in effect (see https://home.bju.edu/bju-policies/ for more details).

   Since the goal of the assignments in this course is to learn to develop the skills covered NOT complete the tasks assigned, and since the use of AI to complete or jumpstart tasks defeats the goal of the assignments, you may not use generative AI tools (i.e. Chat GPT, Bing Chat, Google Bard, etc.) in this course for any assignment without the professors express permission. Should an AI tool be used with permission, its use must be documented (including the tool used, a summary of the prompts provided and the portions of the assignment that were based on AI generated work).

   Cheating is defined as any use of unauthorized helps, and plagiarism is defined as taking someone else's words and/or ideas and claiming them as your own.

   Doing your own work brings glory to God. The claiming of someone else's work as your own is cheating and is a sin. All work done for this class needs to be your own. If information is taken from other sources (which is at times appropriate), it always needs to be referenced and credit given where it is due. Use standard referencing techniques as taught in En 102. Solutions found on the internet are not to be copied.

   Projects/Papers/Presentations: You are permitted to discuss the ideas of your research but are **not** permitted to collaborate with anyone other than your professor on your paper/presentation. Your paper/presentation should represent your own ideas and your own work and should be the product of your own thinking and efforts. You may NOT use AI to generate any portion of your paper/presentation without explicit permission from your professor (and if permission is granted it must be documented as described above).

   If you have a question about any source you are considering using, please gain your professor's approval before using it. You are always permitted to ask your professor for help. Any help they choose to provide is acceptable.