

## College of Arts and Science

Division of Mathematical Sciences

##### Ma 480 ~ Capstone Experience Mathematics I

##### *Fall Semester 2022-2023*

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| Instructor: | Dr. David Brown |
| Office: | Al 74 |
| Office Hours: | MTWF 12:00 pm, 3:00 pm; others by appointment |
| Email: | [ddbrown@bju.edu](mailto:ddbrown@bju.edu) |
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### Course Description:

Required of all students majoring in mathematics. Allows students the opportunity for a thorough development of their philosophy of mathematics, exposes them to a variety of mathematical research, and addresses career and graduate school preparedness. Not applicable toward a minor.

### Course Context: This course supports the following goals of the mathematics program:

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

MM4: Construct a biblically consistent philosophy of mathematics.

### Course Goals:

1. Develop mathematical maturity and independent thinking. MM1
2. Learn to read and digest mathematical literature. MM1
3. Learn to evaluate mathematical works to determine their value and application. MM1, MM4
4. Improve the student’s ability to communicate foundational philosophy. MM1, MM4

### Course Objectives: The student will

1. Gather information about mathematically related careers.
2. Gather information about graduate schools, be ready to take the GRE and the Math Subject GRE, and be ready to apply for graduate school. CG1 (Assessed by GRE Sample Test and Grad School report)
3. Evaluate mathematical work from a biblical perspective. CG1, CG3
4. Select a topic for research in Ma 481. CG2, CG3

### Course Requirements and Evaluation:

1. This class is graded on a standard 10 point scale. Your grade will be determined by the grades earned on each assignment (as well as the completion of each assignment).
2. Each student must complete all of the following assignments to pass this course .
3. (50 pts) Complete the following reading: 2 papers from previous students(see email), Philosophy of Mathematics by Barker, Chapter 1 introduction, Mathematics, Is God Silent? By Nickel Part 1, and Mathematics in a Postmodern Age by Howell and Bradley Introduction and Chapter 1, Mathematics through the eyes of Faith by Bradley and Howell. Email a statement by Sept 25 indicating you have completed this assignment. 10 pts late for each week or fraction thereof.
4. (50 pts) Rough draft of a Biblical philosophy of mathematics. Due Nov 6, 10 pts off for each week or fraction thereof late.
5. (200 pts) Biblical Philosophy Paper. Due Nov 27. 20 pts off for each week or fraction thereof late. There is no specific format or length expected but 6t to 8 pages would be adequate. See instructions for documentation.
6. (50 points) Due Oct 16. Receive Research Topic approval and submit a Research Outline.
7. Talk to at least 2 math professors(favorite teachers or teachers in favorite math subjects) about potential research projects that you might be interested in.
8. Do an online search about the subjects to see if there are any current papers on the topic.
9. Email me about which professors you have talked to and what topics you have considered.

e. (50 points) Submit at most a 1 – page proposal by Nov 17(see research paper instruction). 10 pts off for each week or part thereof late.

f. (50 pts) Research 3 graduate schools to apply to.

1. Graduate school review includes what are the GRE requirements and undergrad course requirements(note that many grad school what you to have certain courses, but may not require you to have all of them).

g. (50 pts) Research 3 jobs to apply to that utilize math skills.

Job review includes what the job description is, what are the requirements for the job(if you don’t have them all, how would you present yourself to the employed).

**Key Dates:**

1. Sept 25: Have all the reading assignments(see 2a above) completed.
2. Oct 3: Have discussed with at least 2 professors potential research ideas for next semester.
3. Oct 16: Have a topic chosen for research before you leave for fall break. Proposal due Nov 17.
4. Nov 7: Submit a rough draft of your Philosophy Paper.
5. Nov 28: Submit final copy of Philosophy Paper,
6. Last regular class day of Semester. Submit summary of job search or grad school search. If you plan on going to grad school in the fall, use the Christmas break to submit applications.
7. Graduate School Reviews and Job Reviews due last class day of semester.

### General Policies:

1. Compliance with student handbook policies is expected during class.
2. No assignment will be accepted after the due date without prior permission of the instructor. Work may always be completed early (see your professor if you wish to take a test early).

Exceptions may be granted by your professor in emergencies. Contact your professor asap by email to notify them of the emergency. Requests for exceptions should be made in person asap.

1. University attendance policy is in effect (see <http://home.bju.edu/life/policies/class-attendance-policy.php> for details).
2. University academic integrity policy is in effect (see <http://home.bju.edu/academics/> for more details).

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: You are encouraged to discuss the general ideas of data analysis as discussed in this course with your classmates, but are **not** permitted to “work together” on your project. Your projects must represent your own ideas and your own work.

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.

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