

# Math 491: Senior Capstone Seminar

## Course Information Sheet and Syllabus<sup>1</sup>

### Spring 2017

#### Instructor:

Dr. Susan Cooper

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*Office Hours:* Mondays & Wednesdays 10:00 a.m. – 10:50 a.m.; or by appointment

*Correspondence:* The most reliable way to contact me is via email.

**Class Times and Location:** MW 9:00 a.m. – 9:50 a.m., Minard Hall – Room 210

**Prerequisites:** Math 270 (It is advisable to have taken at least one 400-level mathematics course, see “Project Proposal” below.)

**Credit Hours:** 2

**Course Web-Page:** We will use *Blackboard* which can be found at <https://bb.ndsu.nodak.edu/>.

**Textbook:** There is no required textbook for this course. Useful resources for typesetting your project and presentation using  $\LaTeX$  will be provided during class meetings and via Blackboard.

**Bulletin Description:** Students will write a short expository or research paper (11 – 16 pages) under the guidance of a mathematics faculty member. The paper will be prepared using the typesetting system  $\LaTeX$ . At the end of the semester, the students will give a 15-minute public presentation describing their work.

**Course Introduction and Objectives:** In this course, students will understand, analyze, and be able to explain a small slice of mathematics *in-depth*, including the motivation and content. Students will also learn and apply methods for presenting mathematics in written, visual, and verbal form.

**Assessments:** Students will be required to complete the following tasks:

- **PROJECT PROPOSAL:** Your project proposal must contain the following: name of advisor, project topic, and preliminary bibliography (i.e., list of the titles and authors of the books/articles that you anticipate using for the project). The advisor must be a mathematics professor at NDSU who agrees to work with you. It is recommended that you select an advisor with whom you have taken a 400-level mathematics course. Moreover, the topic should involve a mathematics problem that was not part of a course that you took as an undergraduate student.

*Grading (2 Points Possible):* You will receive: two points for a proposal that is submitted on time with an advisor’s approval and includes an acceptable topic and bibliography; one point if the proposal is incomplete (e.g., unacceptable topic/bibliography, advisor’s approval is not given); no points for a proposal submitted past the due date.

- **DRAFT PAPERS:** You will be required to submit *via email* two drafts of your paper. The first draft must demonstrate significant progress on the paper. At this time you will receive some feedback from the seminar instructor. You will also provide and receive feedback from a peer on your first draft. The second draft should be a version of the paper that is complete from your point of view and must incorporate the revisions requested by the instructor and reasonable feedback from your peer review (see below) after the first draft. *Your faculty advisor must confirm that the paper is acceptable in this form.*

*Grading (2 Points Possible Per Draft):* For each draft you will receive: two points for a draft that is submitted on time and shows reasonable progress (as judged by the instructor); 1 point for a draft that shows insufficient progress; no points for a draft submitted past the due date.

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<sup>1</sup>The details stated in this course syllabus are subject to change at the discretion of the instructor. Announcements concerning all (if any) changes will be made in a timely fashion.

- **PAPER PEER REVIEW:** You will complete a peer review of the first draft of a paper of a classmate. You will exchange papers with a classmate, read each other's papers and provide comments and suggestions for improvement. Suggestions and comments on your paper must be included in your submission of the first draft of your paper.

*Grading (2 Points Possible):* You will receive: two points if every effort has been made to fulfill both parts of the peer review process (providing a constructive peer review on time and incorporating reasonable feedback on your own paper); one point if only partial effort is made to fulfill both parts of the peer review; no points if no effort is made to participate in a peer review.

- **FINAL PAPER:** Your final paper will be a complete, coherent representation of what you have learned in your project during the semester. Your final bibliography should contain at least one mathematics research paper (i.e., your resources should not be all books).

*Grading (2 Points Possible):* You will receive: two points for a final paper that is submitted on time, is well-written, is organized, and incorporates all the revisions requested by the instructor and your advisor as well as reasonable suggestions from the peer review; one point for a final paper that is poorly written, disorganized, and/or does not incorporate reasonable suggestions from the instructor, advisor, and peer review; no points for a final paper submitted past the due date.

- **PRESENTATIONS:** Each student will give a final public presentation and a practice presentation using Beamer.

*Grading (2 Points Possible Per Presentation):* For each presentation you will receive: two points if the presentation is organized, complete, and covers relevant material (as judged by the instructor); one point if the presentation is not organized, not complete, or covers irrelevant material; no points if no presentation is given.

- **PRESENTATION PEER REVIEW:** Each student will provide feedback on the practice presentations of your colleagues.

*Grading (2 Points Possible):* You will receive: two points for completing a presentation feedback form with constructive comments for at least half of the presentations; one point for completing a feedback form with constructive comments for at least one but less than half of the presentations; no points if you do not complete any presentation feedback forms with constructive comments.

- **CLASS PARTICIPATION:** Mathematics is not a spectator sport. The best way to learn mathematics is by doing mathematics. When learning about  $\text{\LaTeX}$  and Beamer you will required to submit assignments from in-class activities. These assignments are intended to gauge your engagement and progress towards becoming skilled in using these typesetting systems.

*Grading (2 Points Possible):* You will receive: two points for participation and successful completion of all in-class activities and assignments; one point if your participation is inconsistent or in-class activities and assignments are not all completed successfully; no points if you do not participate.

**Late Work Policies:** A late submission of a proposal, draft/final paper, assignment, or peer review without penalty will only be granted for an unavoidable, documented circumstance as described below:

Circumstance	Required Documentation
illness or other medical situation	official note from clinic, hospital, doctor, nurse, or other health care provider
military service	official military activation orders
funeral or other family emergency	official documentation from newspaper, funeral, or medical official
sports or other official NDSU activity	official documentation from NDSU athletics or activity's faculty adviser

A practice or final presentation will only be rescheduled for an unavoidable, documented circumstance.

**Course Grades:** The two drafts, the final paper, and the final presentation are all required; lack of any of these will earn an automatic failing grade. In addition, regular progress reports from your advisor will be requested; an automatic failing grade will be earned if two of these reports are unsatisfactory. For students who successfully turn in two drafts, the final paper, complete the final presentation, and have less than two unsatisfactory progress reports from their advisor, final grades will be determined as follows:

Points Earned	Course Grade
16 – 18	A
14 – 15	B
12 – 13	C
10	D
0 – 9	F

**Attendance and Participation:** Your understanding of the course material will be supported by regular attendance and engagement in class meetings. According to NDSU Policy 333: Class Attendance Policy and Procedure (see [www.ndsu.edu/fileadmin/policy/333.pdf](http://www.ndsu.edu/fileadmin/policy/333.pdf)), attendance in classes is expected. You are expected to be an active participant; this includes participating fully in classroom activities and being engaged with your project. *In order for this class to be successful, it is imperative that you commit to coming to class regularly, that you commit to coming to class prepared, and that you commit to participating in class!* Attendance will not be taken, but participation credit will be included in your course grade. Veterans and student service members with special circumstances or who are activated are encouraged to notify the instructor as soon as possible and are encouraged to provide Activation Orders.

**Tentative Course Schedule and Calendar of Events:** In addition to your weekly regular meetings with your faculty advisor, the following is a list of important class meetings and deadlines. Note that reasonable changes to the schedule will be made if necessary.

Dates(s)	Topic/Event
January 11	Course Policies and Introduction to L <sup>A</sup> T <sub>E</sub> X
January 18	An Assessment of Proof Techniques
January 23	L <sup>A</sup> T <sub>E</sub> X
January 25	L <sup>A</sup> T <sub>E</sub> X
January 25	<b>Project Proposal Due</b> (9:00 a.m. via email)
January 30	L <sup>A</sup> T <sub>E</sub> X
February 1	L <sup>A</sup> T <sub>E</sub> X
February 6	MathSciNet and BibTeX
February 8	MathSciNet and BibTeX
February 15	Group Progress Discussion and Peer Review Set-Up
February 27	Individual Meetings (Progress Reports)
March 1	Individual Meetings (Progress Reports)
March 20	Peer Review of First Draft
March 22	<b>First Draft Due (tex and pdf)</b> (9:00 a.m. via email)
March 27	Individual Meetings (Draft Discussions)
March 29	Individual Meetings (Draft Discussions)
April 3	Beamer
April 5	Beamer
April 19	<b>Second Draft Due (tex and pdf)</b> (9:00 a.m. via email)
April 24	<b>Presentation Slides Due (tex and pdf)</b> (9:00 a.m. via email)
April 26	Practice Presentations
May 1	Practice Presentations and Individual Meetings (Presentation Discussions)
May 3	Individual Meetings (Presentation Discussions)
May 10 (1:00 – 3:00 p.m.)	<b>Final Presentations</b> (Final Examination Period)
May 10	<b>Final Paper Due (tex and pdf)</b> (1:00 p.m. via email)

**Other Resources:** Please note that it is your responsibility to prepare clear and thorough notes from class activities – these will provide you with clarifying examples and reasoning. In addition, it is your responsibility to check your Blackboard and NDSU email accounts regularly for class announcements.

**Special Concerns:** Any students with disabilities or other special needs, who need special accommodations in this course, are invited to share these concerns or requests with the instructor and contact the Disability Services Office (231-8463; <http://www.ndsu.edu/disabilityservices/>) as soon as possible.

**Academic Honesty:** The academic community is operated on the basis of honesty, integrity, and fair play. NDSU Policy 335: Code of Academic Responsibility and Conduct applies to cases in which cheating, plagiarism, or other academic misconduct have occurred in an instructional context. Students found guilty of academic misconduct are subject to penalties, up to and possibly including suspension and/or expulsion. Student academic misconduct records are maintained by the Office of Registration and Records. Informational resources about academic honesty for students and instructional staff members can be found at [www.ndsu.edu/academichonesty](http://www.ndsu.edu/academichonesty).

Any student found guilty of academic dishonesty in this course will receive a grade of 0 for the task in question. In addition, every such student will be reported to the Chair of Mathematics, the Dean of the College of Science and Mathematics, the Provost, and the Registrar. Students found guilty of a second offense of academic dishonesty in this course will receive a course grade of F.

**Classroom Atmosphere and Courtesy:** A part of learning is making mistakes. We want to establish a classroom atmosphere where the inevitable false starts and mistakes become an opportunity to improve – not an opportunity for embarrassment. Please be constructive and polite in questioning your colleagues in class. In addition, cellular telephones, pagers, and other similar devices are not to be used and are to be turned off or set to vibrate-mode during class-time.

**Expectations and General Tips for Success:** I ask that you have a well-defined sense of professionalism, that you always put forth your best effort, and that you develop a sense of responsibility to your educational community. Also, I ask that you exhibit a persistent desire to learn and that you are positive, open, and responsive to feedback. In return I will provide you with significant support. Relax and have fun with the course – I look forward to working with you!