Syllabus — Math 310 Intro to Modern Algebra

Instructor: Dr. Alexandra Seceleanu

Office hours: Wed 12:30 – 1:30 pm, Thur 10 – 11 am and by appointment in 338 Avery Hall.

Email: aseceleanu@unl.edu

Class Times and Location: MWF 11:30 am – 12:20 pm, Burnett Hall – Room 204.

Course Description: There are two primary goals in this course:

- The first goal is to understand properties of the integers and of polynomials, including the overarching algebraic framework that applies to both.
- The second goal is to learn to write clear, logical proofs and solutions to problems. Of paramount importance will be your ability to communicate mathematics rigorously.

ACE Outcome 3: This course satisfies ACE Outcome 3: "Use mathematical, computational, statistical, or formal reasoning (including reasoning based on principles of logic) to solve problems, draw inferences, and determine reasonableness." Your instructor will provide examples, you will discuss them in class, and you will practice with numerous homework problems. The exams will be the primary means of assessing your achievement of ACE Outcome 3.

Text: *A Concrete Introduction to Higher Algebra, 3rd Edition* by Lindsay Childs (2009 hardcover).

Web Page: All course material, including your grades, will be posted on Blackboard.

Grades: Grades for the course will be computed as follows:

Homework	20%	
Quizzes/Worksheets	5%	
Proof Portfolio	10%	
Midterms	40%	(2×20%)
Final	25%	

Homework: The schedule on the reverse page (which will be adjusted as the course proceeds), indicates the chapters/sections that will be discussed each week and the tentative assigned homework problems. Homework will be **collected in class on Fridays** one week after the week in which it was assigned. Collaboration on homework is not only allowed, but also encouraged, as the best way to come up with a solution and to understand it is to explain it to your peers and receive their feedback. However, each student should turn in their own write-up of the solutions.

Quizzes/Worksheets: There will be frequent unannounced in-class quizzes (solo) or worksheets (collaboration allowed) that will be collected. They will give you targeted practice with the most important concepts studied. No make-up quizzes will be given, however your lowest 2 scores will be dropped.

Proof portfolio: The poof portfolio consists of 10 problems chosen both for their importance and for their mathematical beauty. These problems will require deeper insight that the typical homework problems. The goal of maintaining a proof portfolio is to perfect your proof-writing skills. You will get ample time to think about these 10 problems and a chance to work on several drafts of your solutions, getting feedback each time, before you submit the final draft of your proof portfolio.

Exams: There will be two in-class midterm exams and a final. The final exam will be on **Wednesday, May 6, 10 am–12 pm** in Burnett Hall room 204.

Department Grading Policy: Students who believe their academic evaluation has been prejudiced or capricious have recourse for appeals to (in order) the instructor, the department chair, the departmental appeals committee, and the college appeals committee.

Students with Disabilities: Students with disabilities are encouraged to contact me for a confidential discussion of their individual needs for academic accommodation. It is the policy of UNL to provide flexible and individualized accommodation to students with documented disabilities that may affect their ability to fully participate in course activities or to meet course requirements. To receive accommodation services, students must be registered with the Services for Students with Disabilities (SSD) office, 132 Canfield Administration, 402-472-3787 voice or TTY.

Course schedule: this schedule and the assignments therein are subject to change at any time. Additional problems may be assigned that are not from the textbook.

Week of	**Section (in bold) and Homework/proof portfolio problems**	**Due date**
Jan 12	**2A**: 2, 8, 14, 17; **2B**: 30;	Jan 23
Jan 19	**3A**: 4; **3B**: 23, 24 (missing $a > 0$), 25 + additional problems TBA *Friday, January 23 – last day to remove a course from record*	Jan 30
Jan 26	**3D**: 39 (i), 40, 43, 44; **3E**: 57, 60.	Feb 6
Feb 2	**4A**: 1, 2, 3, 5 (typo: should say $\leq \sqrt{n}$); **4B**: 21, 32.	Feb 13
Feb 9	**Proof portfolio**: **2A** 20, **2B** 27, **3E** 65, **4C** 43	Feb 20
Feb 16	**Exam 1 – Monday February 16, in class** **Proof portfolio – first draft due Friday February 20** **1**: 2; **5A**: 1, 7; **5B**: 12, 16, 20.	Feb 27
Feb 23	**6C**: 8; **6D**: 17; **6E**: 43, 44, 48 + additional problems TBA	Mar 6
Mar 2	**7A**: 1, 4, 11, 12; **7C**: 27, 33. *Friday, March 6 – last day to change to P/NP*	Mar 13
Mar 9	**9A**: 3, 15; **9B**: 20, 26, 27, 34.	Mar 20
Mar 16	**9C**: 40, 44, 45, 46, 51; **12A**: 1,7;	Apr 3
	March 23–27 – Enjoy Spring Break !	
Mar 30	**Proof portfolio: 9A** 8, **9C** 53, 54 + additional problem TBA	Apr 10
Apr 6	**Exam 2 – Monday April 6, in class** **Proof portfolio – second draft due Friday April 10** **13A**: 1; **13B**: 5; **14 A**: 4, 7; **14B**: 15, 16; *Friday, April 10 – last day to withdraw (with a grade of W)*	Apr 17
Apr 13	**14C**: 39, 41, 42, 43, 45 (typo: should say degree $\leq n/2$);	Apr 24
Apr 20	**Proof portfolio: 14A** 12, **14C** 40 (parts i, iii, iv)	May 1
Apr 27	**Proof portfolio – final draft due Friday May 1^{st}.**	
	Final exam – Wednesday May 6, 10 am – 12 pm	