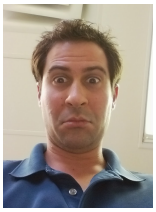
MATH 871 – Topics in Mathematics

Algebraic Geometry

Summer 2015: May 11 – June 5



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Virtual Office Hours:

- Students are welcome to perform their work and send emails at times convenient for them, as long as they respect due dates.
- Student emails will be read at least twice per weekday, usually around 10 AM and 2 PM.
- Emails are typically not read on Saturdays or Sundays.

Text: *Ideals, Varieties, and Algorithms*; D. Cox, J. Little, and D. O'Shea; Third Ed.

Course Description: The graph of a polynomial of one variable is a planar curve, and understanding its geometry helps us answer algebraic questions. Graphing polynomials of two variables yields (often beautiful) surfaces which may be studied with similar techniques. This is too special for many real-world problems which involve dozens or hundreds of variables.

Generalizing curves and surfaces to varieties, extend algebraic-geometric techniques (learned in high school) to more applicable polynomial systems. Along the way, we apply general techniques to both familiar (2 or 3 variable) and unfamiliar (n variables) examples. We will ultimately understand the theory behind solving systems of polynomial equations using elimination. (It has more structure than you think!)

Coursework:

1. Some homework will be assigned using problems from the text, and other problems will be made available on blackboard.
2. Unless otherwise noted, completed assignments are to be uploaded to blackboard by 5:00 PM CST on the dates that they are due. Students are responsible for maintaining reliable access to blackboard, as late homework may not be accepted. (Students are also highly encouraged to turn their homework well in advance to avoid technical problems.)
3. Each assignment may be worth a different number of points. The final grade for this course is the sum of points earned as a percentage of available points.
4. The final assignment will be worth more than any other assignment.

Course Policies:

1. Late homework will never be accepted.
2. Students may discuss the homework by blogging on the course web page, but each student must work each homework problem alone.
3. Work must be shown on assignments, and only neat work will be graded.

Academic Honesty Policy Summary: Any work you turn in must be your own. If you are caught cheating, then you will receive a zero score on that assessment. Additional disciplinary steps will be taken for severe academic dishonesty, such as plagiarism.

Students with Disabilities or Students Who Are Pregnant: It is the policy of the University of Nebraska at Kearney to provide flexible, individualized, and reasonable accommodations to students with documented disabilities or students who are pregnant. To receive accommodation services for a disability, students must be registered with UNK Disability Services. Contact David Brandt, in the Academic Success Office, 163 Memorial Student Affairs Building, 308–865–8214 or by email brandtdl@unk.edu to register. For students needing accommodation due to pregnancy, you need to contact Student Health. (The following link provides information for students and faculty regarding pregnancy rights. www.nwlc.org/resource/pregnant–and–parenting–students–rights–faqs–college–and–graduate–students)

Grade Distribution:

Grade	Minimum Percentage Needed
A+	96.7
A	93.3
A−	90.0
B+	86.7
B	83.3
B−	80.0
C+	76.7
C	73.3
C−	70.0
D+	66.7
D	63.3
D−	60.0
F	0.0

Tentative Course Outline:

Week	**Content**
May 11 – May 15	IV&A, Sec. 1.1–1.4
May 18 – May 22	IV&A, Sec. 1.5, 2.1–2.3
May 25 – May 29	IV&A, Sec. 2.4–2.7
June 1 – June 5	IV&A, Sec. 2.8, 3.1–3.2