Syllabus for Ma 391 - Composition and Communication

Time and Place: MW 3:00 - 3:15, FB 311.

Instructor: Uwe Nagel, POT 763, 257-6793, uwe.nagel@uky.edu.

Office Hours: 11:00 - 11:50 am MWF, or by appointment. You may also consult me by e-mail.

Course Description: The basic algorithm for computations in matrix or linear algebra is Gaussian elimination. This course will focus on the analogous algorithm for computations in non-linear algebra that involve polynomials. The basic output of the algorithm is a so-called Gröbner basis. The use of Gröbner bases in algebra and geometry will be illustrated. Software for computing Gröbner bases is available for free. For example, you can use Macaulay2 online at

http://habanero.math.cornell.edu:3690

An important goal of the course is to enhance your oral and written communication skills.

Text: *Ideals, Varieties, and Algorithms* by D. A. Cox, J. Little, and D. O'Shea.

Grading:

Participation and Homework	70%
Written Project	25%
Draft	5%

Letter grades will be assigned to percentages in the following manner: an A requires at least 90%, a B at least 80%, a C at least 70%, a D at least 60%. Less than 60% corresponds to an E.

Participation: You are expected to attend every class and be engaged during class. In class you should ask questions, volunteer to answer questions, and/or do anything else that will keep you wide awake and engaged in the material. You will be allowed 2 unexcused absences with no penalty. Further unexcused absences will cost 10% of your Participation and Homework grade for each additional unexcused absence.

Excused absences will be governed by University Senate Rule 5.2.4.2. Per University Senate Rules, students who are absent for more than one fifth of the scheduled classes are expected to withdraw.

Homework: Homework problems will be assigned regularly. The assignments will be posted on Canvas at https://www.uky.edu/canvas/. No late homework will be accepted.

Solutions should be written in full sentences and be grammatically correct. Your papers are expected to be typed, not handwritten. Most commonly available word processors, like Microsoft Word, have mechanisms for writing mathematical equations. Alternatively, you might consider using a TeX or LaTeX editor - this is what most mathematicians use to write mathematical documents. Several common versions, like TeX Live, TeXnicCenter, Kile, and TeXShop are available for free, and a basic primer on using them is available here:

http://www.maths.tcd.ie/∼dwilkins/LaTeXPrimer/

You are also expected to present a solution of a homework problem at least once during the semester.

Written Project: An expository paper about a mathematical topic of your choosing will be due on December 4. The total length of your paper is expected to be around 15 pages of double spaced typewritten text. Each student will discuss with me early in the semester the topic to be written about with plenty of guidance provided throughout the semester.

Topic of written project chosen by Monday, October 2
Draft due by Monday, November 13
Written Assignment due on Monday, December 4

Study Groups and Academic Honesty: You are encouraged to work together to understand a problem and to develop a solution. However, the solution you submit for credit must be your own work. Cheating or plagiarism is a serious offense and will not be tolerated. You are responsible for knowing the University policy on cheating (University Senate rules (Section 6.3)).