Syllabus for Math 304
Linear Algebra
Fall 2014
Sections 501, 505

Instructor: Volodymyr Nekrashevych
Office: Blocker 513c
Office hours: Office hours: Monday 10:00–11:00 AM and Friday 3:00–4:00 PM or by appointment.
e-mail: nekrash@math.tamu.edu
Home-page: http://www.math.tamu.edu/~nekrash

Class hours:
Section 501: MWF 12:40–01:30pm BLOC 160
Section 505: MWF 01:50–02:40pm BLOC 160

MATH 304 web page: The web page of the course is
http://www.math.tamu.edu/~nekrash/teaching/14F/M304.html


Topics covered. Introductory course in linear algebra covering abstract ideas of vector space and linear
transformation as well as models and applications of these concepts, such as systems of linear equations,
matrices and determinants. MATH 323 designed to be a more demanding version of this course. Prereq-
usites. MATH 152; junior or senior classification.

Grading. Your grade will be determined by homework, two midterm exams and a cumulative final exam. The weights of each of these are as follows.

<table>
<thead>
<tr>
<th></th>
<th>Homework</th>
<th>Exam I</th>
<th>Exam II</th>
<th>Final Exam</th>
<th>Total</th>
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<tbody>
<tr>
<td></td>
<td>20 pt</td>
<td>25 pt</td>
<td>25 pt</td>
<td>30 pt</td>
<td>100</td>
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<tr>
<td>Section 501</td>
<td>weekly</td>
<td>Oct. 1</td>
<td>Nov. 3</td>
<td>Dec. 15, 10:30am–12:30pm</td>
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<tr>
<td>Section 502</td>
<td>weekly</td>
<td>Oct. 1</td>
<td>Nov. 3</td>
<td>Dec. 16, 3:30–5:30pm</td>
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I may curve any grade and will then compute the course grade by the following rule: A for at least 90 points, B for at least 80 points, C for at least 70 points, D for at least 60 points and F for less than 60 points.
Plan of lectures.

9/1  1.1. Systems of linear equations.
9/5  1.2. Row echelon form. Gaussian elimination.
9/8  1.2. Row echelon form.
9/10 1.3. Matrix algebra
9/12 1.3. Matrix multiplication, its properties.
9/17 2.1. Determinant of a matrix.
9/19 2.1. Determinant of a matrix. 2.2. Properties of determinants.
9/29  Overview.
10/1 First midterm exam.
10/3  3.2. Subspaces.
10/6  3.3. Linear independence.
10/8  3.3. Linear independence. Spaces of functions.
10/10 3.4. Basis and dimension.
10/13 3.4. Change of basis.
10/17 3.5. Row space and column space. Applications to systems of linear equations.
10/20 3.5. Row space and column space. Applications to systems of linear equations.
10/22 4.1. Linear transformations. Definitions and examples.
10/24 4.1. Linear transformations. Definitions and examples.
10/31 Overview.

11/3 Second midterm exam.
11/5 4.3. Similarity, changes of basis for a linear transformation.
11/7 5.1. Orthogonality. The scalar product in $\mathbb{R}^n$.
11/10 5.4. Inner product spaces.
11/12 5.5. Orthonormal sets
11/14 5.6. The Gram-Schmidt orthogonalization process.
11/19 6.1. Eigenvalues and eigenvectors.
11/21 6.3. Diagonalization.
11/24 6.3. Diagonalization.
11/26 6.3. Exponent of a matrix.
12/1 5.7. Orthogonal polynomials.
12/3 5.5. Trigonometric polynomials. Fourier transform.
12/5 Overview.
12/8 Overview.
**Make-up policy:** Make-ups for missed quizzes and exams will only be allowed for a university approved excuse in writing. Wherever possible, students should inform the instructor before an exam or quiz is missed. Consistent with University Student Rules, students are required to notify an instructor by the end of the next working day after missing an exam or quiz. Otherwise, they forfeit their rights to a make-up.

**Scholastic dishonesty:** Copying work done by others, either in-class or out of class, is an act of scholastic dishonesty and will be prosecuted to the full extent allowed by University policy. Collaboration on assignments, either in-class or out-of-class, is forbidden unless permission to do so is granted by your instructor. For more information on university policies regarding scholastic dishonesty, see University Student Rules.

   Remember the Aggie Code of Honor: “An Aggie does not lie, cheat, or steal or tolerate those who do.”

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