MATH 120: Introduction to Linear Algebra
Summer 2023 Syllabus

Place/Time: Online	**Instructor: Wanchunzi Yu**
Duration: May 29-June 23	**Office Hours: TBA (Or by appointment)**
Course Credits: 3	**E-mail: wyu@bridgew.edu**

Course Description
Topics include algebra and geometry of vectors, linear equations, matrices, determinants, basis and dimension, and the use of homogenous coordinates for the matrix representation of linear and geometric transformations and their compositions.

Prerequisites
Mathematics placement test

Texts
Elementary Linear Algebra, 8th Edition, (with **WebAssign**), by Ron Larson
Students must purchase access to WebAssign, but a hard copy of the text is **optional**. Access to WebAssign includes access to an electronic version of the textbook.

Topic Calendar

No.	Sections Covered (Tentative)	Week
1	1.1 Introduction to Systems of Linear Equations	Week 1
2	1.2 Gaussian Elimination and Gauss-Jordan Elimination	Week 1
3	1.3 Applications of Systems of Linear Equations	Week 1
4	2.1 Operations with Matrices	Week 1
5	2.2 Properties of Matrix Operations	Week 1
6	2.3 The Inverse of a Matrix	Week 1
7	2.4 Elementary Matrices	Week 1
8	2.5 Markov Chains	Week 1
9	2.6 More Applications of Matrix Operations	Week 1

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10	3.1 The Determinant of a Matrix	Week 1
11	3.2 Determinants and Elementary Operations	Week 1
12	3.3 Properties of Determinants	Week 1
13	3.4 Applications of Determinants	Week 1
14	4.1 Vectors in R^n	Week 2
15	4.2 Vector Spaces	Week 2
16	4.3 Subspaces of Vector Spaces	Week 2
17	4.5 Basis and Dimension	Week 2
18	4.6 Rank of a Matrix and Systems of Linear Equations	Week 2
19	4.7 Coordinates and Change of Basis	Week 2
20	4.8 Applications of Vector Spaces	Week 2
21	5.1 Length and Dot Product in R^n	Week 2
22	5.2 Inner Product Spaces	Week 2
23	5.3 Orthonormal Bases: Gram-Schmidt Process	Week 2
24	5.4 Mathematical Models and Least Squares Analysis	Week 2
25	5.5 Applications of Inner Product Spaces & Exam 1 Review	Week 2
26	6.1 Introduction to Linear Transformation	Week 3
27	6.2 The Kernel and Range of a Linear Transformation	Week 3
28	6.3 Matrices for Linear Transformation	Week 3
29	6.4 Transition Matrices and Similarity	Week 3
30	6.5 Applications of Linear Transformations	Week 3
31	7.1 Eigenvalues and Eigenvectors	Week 3
32	7.2 Diagonalization	Week 3
33	7.3 Symmetric Matrices and Orthogonal Diagonalization	Week 3
34	7.4 Applications of Eigenvalues and Eigenvectors	Week 3

35	8.1 General Theory for Linear Differential Equations	Week 4
36	8.2 Constant Coefficient Homogeneous Linear Differential Equations	Week 4
37	8.3 The Method of Undetermined Coefficients: Annihilators	Week 4
38	8.5 Oscillations of a Mechanical System	Week 4
39	8.6 RLC Circuits	Week 4
40	8.7 The Variation of Parameters Method	Week 4
41	9.1 First-Order Linear Systems	Week 4
42	9.2 Vector Formulation	Week 4
43	9.3 General Results for First-Order Linear Differential Systems	Week 4
44	9.4 Vector Differential Equations: Nondefective Coefficient Matrix	Week 4
45	9.6 Variation-of-Parameters for Linear Systems & Final Exam Review	Week 4

Homework

Homework problems are online, we will use the online resource WebAssign for weekly homework assignments and tutorial videos. Make sure to select the correct course, the url for this section link.
Please refer to WebAssign Instruction on the blackboard for more details. Some written homework may also be collected. NO LATE HOMEWORK WILL BE ACCEPTED.

Blackboard

Grades and additional course content will be uploaded to Blackboard. Make sure to check it regularly for updates.

Attendance

Attendance for the course will be the videos with questions on WebAssign Lectures. For each section, videos with questions are available on WebAssign. Please complete the videos to receive the full attendance credits.

Midterm Exams

You will take 1 mid-term exam during the semester. The exam is given online, time will be limited to class time. Each will involve a mix of mechanical skills and conceptual reasoning. The best possible preparation for them is regular attendance and completion of assigned homework.

You may have 1 page 8x11 of hand written notes (two sides) on each exam, including a final exam. Make-up exams are only given in case of documented emergencies.

Final Exam
The final exam will take place on online on Blackboard. The official BSU Final Exam Schedule is here.

Grading
Your final course grade will be determined by
Homework: 30%
Attendance: 30%
Midterm: 20%
Final Exam: 20%

Grading Scale:
Letter grades will be assigned as follows:

A	93-100	C	73-76
A-	90-92	C-	70-72
B+	87-89	D+	67-69
B	83-86	D	63-66
B-	80-82	D-	60-62
C+	77-79	F	below 60

THE ACADEMIC ACHIEVEMENT C ENTER (AAC) provides students with academic services and resources that propel them toward successful and timely degree completion. With all services available online for the fall, the AAC is the largest hub of student academic services on campus. The AAC is comprised of four major support areas: Academic Advising (first-semester freshmen), Disability Resources and Student Accessibility Services, Learning Assistance (Academic Coaching and Tutoring), and Testing Services.
Learning Assistance (LA) consists of both Academic Coaching and Tutoring. Tutoring areas include: Math Services, the Accounting & Finance Lab, Writing Studio, Tutoring Central (100/200 introductory and Core Curriculum courses), and Second Language Services. All LA services for the fall 2020 semester are being offered online. To use the virtual drop-in tutoring or to make an appointment for Tutoring or Academic Coaching, please sign into our platform, Accudemia, using your BSU credentials, or bookmark the link: https://bridgew.accudemia.net.

Academic Conduct
The academic integrity policy of Bridgewater State University will be strictly enforced. This policy can be found in the BSU Student Handbook. Specifically, the policy requires that students do not cheat, fabricate, plagiarize, or facilitate academic dishonesty. Students who passively engage in cheating (i.e. allowing others to cheat off them) may receive the same consequences as the person copying. Violations will be handled in accordance with BSU's academic integrity policy.

Student Accessibility Services
Bridgewater State University is committed to providing equal access to students with documented disabilities. If you have a disability that may impact your experience in this class and for which you may require accommodations, please see the Student Accessibility Services (SAS) office so that such accommodations can be considered. The SAS can be reached at SAS@bridgew.edu or 508.531.2194. If you are granted accommodations, please meet with me confidentially to review how they will be applied in this course.

* This syllabus may be amended during the semester.