# Math 309 FALL 20171. Section Information

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| **Section** | **Time** | **Location** | **Instructor** | **email** | **Office Hours** |
| 12 | MWF 11am – 12pmMWF 1 – 2pm  | Rebstock 215Brown 118 | Jack Shapiro | jshapiro@wustl.edu  | M, W : 2:30 – 3:30pmT, Th : 9:30 – 10:30amCupples I ,  107B  |
| Webworks must be completed by 11:59 pm on their due date.Homeworks will be handed into crowdmark.com on their due date. They will be returned the following week.-------------------------------------------------------------------------------------------------------------------------------------------------------------HOMEWORKS :HW #1: section 1.1, problems 48, 50; section 2.1, problems 20, 28HW #2: sec. 2.2, problems 24, 44; sec. 2.4, problems 14, 40HW #3: sec. 3.1, problem 28; sec. 3.2, problem 32; sec. 3.3, problem 28; sec. 3.4, problem 22 HW #4: sec 4.4: problem 38; sec 4.5 problem 50; sec 4.6, problem 38; sec. 4.7, problem 24 HW #5: sec. 5.2, problems 24, 30; sec. 5.3: problem 34; sec 5.4: problem 12HW #6: sec 6.1, problem 30; sec 6.2, problem 18; sec 6.3, problem 40; sec. 6.4, problem 10HW #7: sec 7.1, problems 24 and 48; sec 7.2, problems 20 and 30HW #8: sec 8.1, problem 58; sec 8.2, problem 34; sec 8.3, problem 56; sec 8.4, problem 54 HW #9: sec 8.5, problems 20, 30, 32, 40 |

## 2. Grading Information

There will be two evening exams during the semester, E1, E2, and a Final Exam.

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| **Exam** | **Date** | **Location** | **Time** |  |
| E1 | October 9th  | [Check here on exam day.](http://www.math.wustl.edu/seatlookup/)  | 6:30 – 8:30 PM |  |
| E2 | November 13th  | [Check here on exam day.](http://www.math.wustl.edu/seatlookup/)  | 6:30 - 8:30 PM |  |
| Final Exam | December 18th | [Check here on exam day.](http://www.math.wustl.edu/seatlookup/)  | 10:30am – 12:30pm |  |
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**GRADES  :** Each of the Exams,  1, 2 and the final, will count  23%  toward the final course grade while the HW will count 16% , and the remaining  15%  will come from the WW. The formula **T** for the total average will be:

**T = .23(E1 + E2 + F ) +  .16 HW  +  .15 WW**
Then your   **letter grade**     for the course  will     **not be lower**     than it would be if it were based  on  the scale appearing in the following table .

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| **Numerical Range** | **Letter Grade** |
|         90 - 100  | A |
|     75 – 89.99   | B |
|     60 -  74.99  | C |
|     50  -  59.99 | D |
|        0 -  49.99 | F   or  NC |

**Missed Exams  :**

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| **Rules for Exams : You should always bring your Washington University Photo  ID  to exams. You can bring a scientific calculator to the exam for calculations. The exams will be multiple choice. The following are examples of calculators that are acceptable:Casio FX-250, Casio FX-260, FX-270, Casio FX-300Sharp EL-501, Sharp EL-506, Sharp EL-520, Sharp EL-531, Sharp EL-546TI-30, TI-34, TI-36 Just before each exam I will let you know about room assignments by email . You will be allowed to enter the exam room a few minutes before the starting time to find a seat and get ready for the start of the exam. Make sure you put your correct 6 digit ID number on your answer card. You can take your exam booklet with you after you hand in your card.** |

## 3. Text

Elementary Linear Algebra, 8th Edition, Ron Larson

## 4. Syllabus

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| Week | Sections | Suggested Problems (Only odd problems) |
| #1   M 8/28 W 8/30 F 9/1 | 1.1:   Linear Equations2.1:   Matrices2.1: Matrices | **1.1:** 37 - 51 **2.1:** 5, 7, 9, 19,25 **2.1:** 37, 39, 45, 47, 49, 51, 55      |
| #2   M   9/4            W   9/6       F    9/8   |  No Class - Labor Day2.2: Matrix Operations2.4: Elementary Matrices | **2.2:** 1 – 43, 51, 59 **HW # 1 Due (W)****2.4:** 1 – 17 |
| #3   M   9/11       W   9/13       F    9/15  | 2.3, 3.1:  Inverse of Matrix, Determinant3.2: Operations on Determinants 3.3, 3.4: Determinants & Cramer’s Rule | **2.3:** 13, 15, 17, 25, 31, 33, 35, 41 - 47     **WW # 1  Due (M)****3.1:** 13 – 27, 39, 41, 45 - 51             **3.2:**25 - 33 **HW # 2  Due** (W) **3.3:** 3,17, 21, 27, 33, 45 **3.4:** 1, 3, 13, 17, 21  |
| #4   M  9/18       W  9/20      F  9/22 | 4.2-4.3: Vector Spaces4.4: Spanning Sets NO CLASS ON F 9/22    | **4.2:**  31, 33, 35**4.3:**  21, 23, 25, 29, 31, 33, 37, 39, 41, 43   **4.4:** 5, 7, 33, 35, 37, 57  **WW #2 Due,** **HW # 3  Due** (W)  |
| #5   M  9/25      W  9/27       F   9/29    | 4.5: Basis and Dimensions 4.6: Rank of Matrix4.7: Change of Basis   | **4.5:** 41, 43, 47, 49, 51**4.6:** 13, 15, 17, 23, 25, 33, 37, 41, 43, 45 **WW # 3  Due**(W) **4.7:** 7, 9, 13, 15, 19, 21, 23, 45, 47 |
| #6   M   10/2 W  10/4       F   10/6 |  5.2: Inner Product Space  5.3: Gram-Schmidt Process  NO CLASS   F, 10/6         | **5.2:** 5, 7, 9, 11, 21, 23,29, 31, 35, 37, 39, 41  **5.3:** 31, 33, 35, 57, 59, 61**HW #4** and **WW # 4  Due** (Thursday)  |
| #7   M  10/9       W 10/11       F   10/13 |  REVIEW FOR EXAM I EXAM I M, 10/9 6:30-8:30pm5.4:  Orthogonal Complement  NO CLASS F, 10/13 |                        All covered material up to and including 4.7**5.4:**5, 7, 9, 11            |
| #8 M 10/16   W 10/18 F 10/20 |  FALL BREAK 6.1: Linear Transformations  6.3: Matrices for Lin. Trans.  | **6.1:** 11, 13, 15, 17, 19, 21, 67**6.3:** 1 – 9 **WW # 5 Due HW # 5 Due (F)**  |
|  #9 M 10/23 W 10/25 F 10/27 | 6.3: Matrices for Lin. Trans.6.2: Kernel and Range6.4: Transition Matrix  | **6.3 :** 27 – 39, 43, 45, 476.2 : 1 - 23 **6.4:** 1 – 11  |
| #10 M  10/30  W  11/1         F 11/3   | 6.4:   Similarity 7.1:   Eigenvalues and Eigenvectors7.1: Eigenvalues and Eigenvectors | **6.4:** 13, 17, 19, 21, 23 **WW # 6 Due,**  and **HW # 6 Due** (Wed)**7.1 :** 9 – 27; 41 - 49                          |
| #11  M  11/6        W  11/8 F   11/10   | 7.2:  Diagonalization7.3:  Symmetric Matrices7.3:  Orthogonal diagonalization  | **7.2:** 1 – 19, 27, 29 **7.3:** 1 – 15**7.3:**  19, 23, 39, 41, 45, 47, 49    **WW # 7** and **HW # 7 Due**  (F)             |
| #12   M  11/13         W  11/15         F  11/17 |  REVIEW FOR EXAM II **EXAM  II** 6:30 - 8:30  PM (M) 8.1: Complex Numbers 8.2: Division of Complex Numbers |  All covered material between 5.2 and 7.2 **8.1:** 27 – 39, 45 – 53**8.2:** 1, 3, 7, 9, 15, 17, 31 - 37 |
| #13 M  11/20          W 11/22    F   11/24 | 8.3: Polar Form THANKSGIVING THANKSGIVING | **8.3:** 1, 3, 5, 17, 19, 27, 31, 35, 37, 53, 55, 63      |
| #14   M  11/27         W  11/29          F    12/1          |  8.4: Complex Vector Spaces 7.4:  Systems of Differential equations 8.5: Hermitian Matrices | **8.4:** 5, 7, 17, 19, 29, 31, 35, 37, 67, 69  **7.4:** 17, 19, 21, 23, 29,31    **WW &**  **HW # 8 Due**  ( W)  **8.5:** 1, 3, 7, 9, 11, 13, 15 |
| #14   M  12/4         **W** 12/6  **F** 12/8 | 8.5: Hermitian Matrices8.5: Unitary Matrices REVIEW SESSION  | **8.5: 21, 23,** 25, 27 **8.5 : 33, 35, 37, 39, 41** **HW # 9 & WW # 9 Due** (F)      |
|  **M** 12/18  |  **FINAL EXAM 10:30am - 12:30pm** |  |

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