## Homework 乡Project Assignments

Every Tuesday either a project or a graded homework set will be due. Nearly every Thursday and on some Tuesdays practice homework sets are due. See the below charts for details.

All the projects will require the use of Matlab. The computer labs in Fretwell 319 and 321 have the Matlab program. For several of the projects, you will need to download Matlab scripts (program files ending in .m). These files can be found from the class website.

When working through each project, you can be as fancy or as direct as you want. I would highly recommend that you use the help button. It will give you the commands and how to code them. You can use the help option in the command line (ie: Type help det in the command line and you'll get back how to use the det function. Note, the man command doesn't work in Matlab).

The projects all start out with a teaching/directions section and then have several questions at the end. Some of the projects have questions to answer in the middle of the teaching section. Some of the projects have enough room to write all your answers on the project sheets - most don't. For your answers, either write them all on the project sheets or write them up on your own paper with everything clearly labeled. For the sets that have additional questions, just attach your work for those problems at the end of your project. If you are asked to write code, attach your script to what you turn in. Every time you are asked to run Matlab commands, attach the results. There are ways to make the codes \& the output print nicely (look at the publish feature), but bare minimum would be to print out your command line history.

| Matlab Projects | Section(s) <br> Covered | Additional Questions | Due Date |
| :--- | :--- | :--- | :--- |
| Project 1: Introduction to Matlab | $\mathrm{n} / \mathrm{a}$ | $\mathrm{n} / \mathrm{a}$ | Jan 19 |
| Project 2: Round Off Error \& Partial <br> Pivoting | 1.5 | Section 1.6: 4, 12, 14 | Feb 2 |
| Project 3: Visualizing Linear <br> Transformations | 1.9 | Sect 1.10: 2, 6, 8, 14 | Feb 16 |
| Project 4: Exploring Properties of Inverses | $2.2-2.4$ | Section 2.3: 41-42 and <br> Section 2.4: 26-27 | March 2 |
| Project 5: Lagrange Interpolation | $\mathrm{n} / \mathrm{a}$ | n/a | March 23 |
| Project 6: Determinants \& Flops | $3.1-3.3$ | Section 3.1: 43 - 46 | April 6 |
| Project 7: The Rank Command | 4.6 | $\mathrm{n} / \mathrm{a}$ | April 20 |
| Project 8: A Taste of Numerical Linear <br>  <br> SVD | $2.5,6.4,6.5$, <br> and 7.4: | $\mathrm{n} / \mathrm{a}$ | May 4 |


| Graded Homework Sets | Section(s) Covered | Due Date |
| :--- | :--- | :--- |
| hw set 1 | n/a | Jan 14 |
| hw set 2 | $1.1-1.4$ | Jan 26 |
| hw set 3 | $1.5-1.8$ | Feb 9 |
| hw set 4 | $1.9-2.2$ | Feb 23 |
| hw set 5 | $2.3-2.5$ | Feb 23 |
| hw set 6 | $3.1-3.3$ | March 16 |
| hw set 7 | $4.1-4.3$ | March 30 |
| hw set 8 | $4.4-4.7$ | April 13 |
| hw set 9 | $5.1-5.4$ | April 27 |
| hw set 10 | $6.1-6.4$ | May 4 |

The practice homework sets will be counted as extra credit on the tests. These sets will be accepted anytime before the day the test is given. If the set is turned in by the due date, it won't be counted as late. Since these sets are for extra credit, they will be scored as follows: 0\% (not turned in or blank), $50 \%$ (late and/ or mostly blank or mostly incorrect), or $100 \%$ (on time and mostly correct). A good rule of thumb for remembering the due dates is to assume that the section is due the class after we finish it in class.

| Practice Homework Sets | Section | Problems from Textbook | Due Date |
| :--- | :--- | :--- | :--- |
| practice set 1 | 1.1 | $3,7-8,12,16-17,21-25,29-30,33-34$ | $1 / 19$ |
| practice set 2 | 1.2 | $1-4,7-15,19-27,33$ | $1 / 19$ |
| practice set 3 | 1.3 | $1,4-7,9-12,18,21,23-25,27$ | $1 / 21$ |
| practice set 4 | 1.4 | $1-13,15,17,19,23-26,31-32$ | $1 / 21$ |
| practice set 5 | 1.5 | $3-14,19,23-24,27-33$ | $1 / 26$ |
| practice set 6 | 1.7 | $3-12,17-22,27-28,33-34$ | $1 / 28$ |
| practice set 7 | 1.8 | $1-4,7-9,11,17-22,29-31$ | $2 / 4$ |
| practice set 8 | 1.9 | $1-11,15-20,23-28,31-35$ | $2 / 9$ |
| practice set 9 | 2.1 | $1-12,15-20,27-28$ | $2 / 9$ |
| practice set 10 | 2.2 | $1-15,18,29-32,35,37$ | $2 / 11$ |
| practice set 11 | 2.3 | $1-17,20,27,33-35$ | $2 / 11$ |
| practice set 12 | 2.4 | $4-6,10,13,15$ | $2 / 11$ |
| practice set 13 | 2.5 | $1-2,7-14,17,24-26,31$ | $2 / 18$ |
| practice set 14 | 2.6 | $1-5,14$ | $2 / 18$ |
| practice set 15 | 3.1 | $11-21,25-28,31-32,35-41$ | $2 / 25$ |
| practice set 16 | 3.2 | $9-21,24,27-30,37-40,(31-36)$ | $3 / 2$ |
| practice set 17 | 3.3 | $3-6,9-14,17-20,31$ | $3 / 16$ |
| practice set 18 | 4.1 | $1-3,6-7,9-18,21,23-24,28$ | $3 / 18$ |
| practice set 19 | 4.2 | $1-2,4-5,7-10,15-16,23-27,31-32$ | $3 / 25$ |
| practice set 20 | 4.3 | $1-6,9-11,13-16,21-25$ | $3 / 25$ |
| practice set 21 | 4.4 | $1-3,6-7,9-10,13-17,33,37-38$ | $4 / 1$ |
| practice set 22 | 4.5 | $1-10,19-22$ | $4 / 1$ |
| practice set 23 | 4.6 | $1-7,11-13,17-18,26-27,31-32$ | $4 / 8$ |
| practice set 24 | 4.7 | $1-2,5,7-14$ | $4 / 8$ |
| practice set 25 | 5.1 | $3-10,15-19,21-23$ | $4 / 22$ |
| practice set 26 | 5.2 | $1-4,9-12,15-23$ | $4 / 22$ |
| practice set 27 | 5.3 | $1-14,19-24$ | $4 / 22$ |
| practice set 28 | 5.4 | $1-3,5,8-22,25$ | $4 / 22$ |
| practice set 29 | 6.1 | $3-20,22-24$ | $4 / 29$ |
| practice set 30 | 6.2 | $1,5,7-8,11-12,17-18$ | $4 / 29$ |
| practice set 31 | 6.3 | $1-5$ | $4 / 29$ |
| practice set 32 | 6.4 | $1-4,13-16$ | $5 / 4$ |
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