

Information Sheet for Math 307 Spring 2020

Class Meets: MTRF 14:00 - 14:50 online

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Office: BH 184A

Office Hours: MTWR 13:00-13:50

Course Website: http://faculty.wvu.edu/curgus/Courses/307_202020/307.html

Goals: In this course, students will be introduced to the computer program *Mathematica*. Such programs are known as computer algebra systems (CAS). The goal of the course is to get students to use this program for numerical, symbolic and graphical computations and simulations, and to teach students the basics of *Mathematica* programming. We believe that these goals are best achieved when *Mathematica* is used to explore some interesting mathematics.

Organization: The class will meet online through Canvas. The class requires intensive computer use. You will receive three emails: **The First** will inform you how we will share files using

<https://www.dropbox.com>

The Second will explain how to use online version of *Mathematica*; **The Third** will explain how to access *Mathematica* using remote log in to Western's computers.

A lot of useful information about how to use *Mathematica* is deposited in our shared folder on Dropbox:

`\307_Files\`

In particular the notebooks with the assignments will be here

`\307_Files\Assignments\`

In your Dropbox you will also find the shared folder

`\307_Questions\`

You have writing privileges for this folder. In this folder you can put *Mathematica* notebooks with your questions. If a particular piece of code gives you problems, then create a small notebook containing a troublesome code and an explanation of what you are trying to achieve. Name that file

`YYYYMMDD.Yourlastname_topic.nb`

where YYYYMMDD is the date on which you placed the file in the directory, `Yourlastname` is the last name of the student who placed the file and `topic` is a very brief (at most 4 characters) indication of what is in the file. If the question pertains to a particular problem on the assignment you can indicate that information. For example, if a student with the last name Doe is asking a question which pertains to the Assignment 1, Problem 2, then the file with the question should be named as follows

`20200408.Doe_A1P2.nb`

I will write my answer as

`20200408.Doe_A1P2_Curgus.nb`

In fact each student can answer. Please save your answer in a file with your last name attached at the end as indicated above.

These folders will be mirrored on the University's K-Drive which you can access when you are logged in to University computer:

`K:\Math\Curgus\307\`

Material: Information about the software and relevant mathematical background is in the file `Primer.nb` located in the Dropbox folder `\307_Files\2020\` and its mirror `K:\Math\Curgus\307\2020\`.

This is a class with a heavy homework load. Do expect to spend many hours per week working on the assigned problems. The class is not just about learning a computer algebra system *Mathematica*. I consider *Mathematica* to be just a tool that enables you to work on meaningful mathematical problems. The nature of any meaningful problem is that it encompasses a certain level of uncertainty.

And the beauty of it is that with a certain amount of intellectual effort, this uncertainty can be overcome. This takes time. But, without putting in one's own effort, one can not develop higher-order thinking skills: critical and creative thinking, ability to analyze, conjecture, synthesize, evaluate, ...

Homework: Your work should consist of reading the provided materials and working on homework problems. During online classes, I will create *Mathematica* notebooks in which I will discuss problems that are closely related to the homework problems, but most of the work on these problems will be done outside of the class time. Discussions with classmates are encouraged. However, the work that is submitted must be done individually. In particular, the final write up of your homework assignments should be done without any collaboration with classmates. If several students submit nearly identical code and presentation for a particular problem, then all students with that code will receive minimal partial credit for that problem.

Assignments: There will be three assignments. The third assignment replaces the final exam. The due dates for the assignments will be announced on the class website. An assignment will be due approximately ten days after it has been posted. Your homework should be deposited in your folder in Dropbox which you shared with me:

`\307_Yourlastname\`

The file (notebook) with your homework should be named using your last name, the underscore `_`, the capital letter `A` and the assignment number. For example, my first homework should be named `Curgus_A1.nb`

Please use the folder `\307_Yourlastname\` only for the Math 307 assignments and no other files. You will receive an email from me containing more details about sharing a folder with me on Dropbox.

Homework notebooks: ➤ The notebook with your homework should be named using your last name, the underscore `_`, the capital letter `A` and the assignment number. For example, my first homework should be named `Curgus_A1.nb`

- Your homework notebooks should be organized neatly. A notebook should start with a title cell. Individual assigned problems should be presented as sections.
- Each problem should contain a sufficient amount of text so that I can make sense of what is being presented. If I ask a specific question in a problem, then that question should be answered by a complete sentence, which should be followed by justification.
- The notebooks should be saved with all output deleted (click `Cell`, then `Delete All Output`).
- You should make sure that all the calculations evaluate properly. A good way to test this is to open your notebook and evaluate the entire notebook by clicking `Evaluate Notebook` in the `Evaluation` menu.

Here is a list of common mistakes in homework notebooks:

- Text in input cells. (Text should be put in special “text” cells. Or if the text is included in an input cell, then it should be commented out in `(* *)`.)
- *Mathematica* reports `Null` in `Graphics` output. (This error occurs when an empty space is included in a list of graphics objects.)
- If several students submit identical code for a particular problem, then all students with that code will receive partial credit.
- Homework includes material that is not directly related to your solutions. There is no need to repeat the statements of the problems in your notebook. Answer all the questions and present your solutions in a “teacher-friendly” way.
- Claims not justified by mathematical arguments, *Mathematica* calculations and pictures.
- Answers to specific questions are not sufficiently specific.
- The names of the functions and the variables not cleared before the definition.

You: The work that you submit in your assignments must be your own. You should put a special effort into making your assignments truly your own. The best way to do this is to have your original solution that will differ from the solutions of others. If you have gotten a significant help from another student, or if a solution is a result of collaboration, then you must find your own way of presenting and illustrating that solution. No two illustrations that a certain command does what it is expected to do should be the same. The presentation of solutions in your homework should be your own and it should differ from other presentations.

If you end up using a formula or a piece of particularly original code written by another student, acknowledge that by including the name of the student preceding her or his work. Please be specific, by saying something like: “The following code is written by ...” Have in mind that formulas and code can always be improved or modified; you can individualize them.

A homework without original individual contribution will receive only partial credit.

Assessment: Students will be assessed on the quality of the assignments submitted. Each assignment will be graded by an integer between 0 and 100. This number will reflect

- mathematical accuracy and completeness of your work and quality of justifications offered for your claims,
- accuracy, efficiency, and completeness of your *Mathematica* code,
- organization of your homework notebook and your original contribution.

Your final grade will be the average of the assignments’ grades. Your letter grade for the Mathematica part will be assigned according to the following table.

F : 0 - 39	D- : 40 - 44	D : 45 - 49	D+ : 50 - 54	C- : 55 - 59	C : 60 - 64
C+ : 65 - 69	B- : 70 - 74	B : 75 - 79	B+ : 80 - 84	A- : 85 - 89	A : 90 - 100

The final grade for the class is the average of the grades for the first and the second part.