

5 Units

CRN 76520

## Course Syllabus

PASADENA  
CITY COLLEGE

Dr. Jorge Basilio

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## Basic Info

Meetings

Mondays &amp; Wednesdays from 7:00 to 9:30 pm

Meeting Location

Room R-407

Office Hours

6:30–7:00 pm in R-406

Course websites

[http://bit.ly/jorgemathbasilio\\_Math\\_10\\_f19](http://bit.ly/jorgemathbasilio_Math_10_f19)  
Canvas, CoCalc

## What is this class?

## Course Description

Vector spaces, linear transformations, determinants, solutions of systems of equations, algebra of matrices.

**Prerequisites:** MATH 5B, or placement based on the Math assessment process.

## Student Learning Outcomes

Upon successful completion of the course, students will be able to:

- graph and geometrically describe the action of a linear transformation in two and three dimensions.
- write cogent proofs, with clear justifications, of basic theorems, using direct applications of definitions.
- prove or disprove if a set, together with addition and multiplication, satisfy the ten axioms of a vector space, and if so, prove if a subset of such is a subspace.
- prove or disprove if a function from one vector space to another is a linear transformation, and if so, construct its matrix relative to an arbitrary basis in the finite dimensional case, and determine its kerne, range and inverse, if possible.
- prove or disprove if a bilinear form is an inner product on a vector space, and if so, use the Gram-Schmidt orthogonalization process to find an orthonormal basis.

## Evaluation

Grading Criteria	Grade Cutoffs	
In-class Assignments (ICAs)	A	90-100%
Exams (4 best @ 15% each)	B	80-89%
Final Exam	C	69-79%
	D	60-68%
	F	<59%

## Important Dates

- 8/26 Fall 2019 begins
- 8/26 First day of class
- 11/11 Labor Day - No classes Meet
- 11/11 Veteran's Day - No classes Meet

- 9/8 Last day to add this course
- 9/8 Last day to drop WITHOUT a "W" & Receive refund
- 11/15 Last day to drop WITH a "W"
- 12/15 Last day of Fall 2019

## Course Materials

### Textbook: *A Portrait of Linear Algebra*, 3rd Ed, by Jude Socrates

- Please download the following from my website: Answer Key, the Errata file (containing mistakes in the text), and the Lecture files.

## Calculator/Technology

- Scientific Calculator will be allowed during class and exams. If you have a graphing calculator you can use it during class but it will not be allowed during exams.
- There are many powerful "calculators" online. These are an excellent resource but they must be used responsibly. I highly recommend (all are FREE): [Geogebra](#), [Desmos](#), [Symbalab](#), [WolframAlpha](#), & [SAGEMath](#) (via CoCalc)

## Supplies

- A 3-Ring Notebook or a Binder with Paper, a stapler, pens/pencils (having 2 or 3 different colors really helps with note taking!)
- You will be required to print "In-class Assignments" and bring them to class so please budget that in or use free printing on campus.

## Requirements

### Assignments

#### In-class Assignments (ICAs)

- I will arrange the class into groups of 3 or 4 at the beginning of each class and several problems will be assigned.
- You are expected to discuss ideas together to work towards a solution; *write up your own solutions* and compare your work with each other for correctness.

#### Notes (ICNs)

- You must take careful notes during class as part of your learning experience. These will be collected on test days. There is no numeric value given to the in-class notes.

#### Labs

- There might be optional labs you can complete for extra-credit towards your ICA grade.
- Labs are done using the SAGEMath software that is available for FREE via the CoCalc website.

### Assignments

#### Homework

- There is no numeric value given to the homework.
- A homework list is provided on our course website, organized into section covered for each exam, and **is due on the day of each exam!**
- You are expected to attempt (and hopefully complete) at least 75% of the problems in each section that is assigned for that exam.
- If I do not receive your homework on-time (or if less than 75% complete), **your score for that exam will be recorded as zero.**
- If you cannot make it to class (e.g. sick), homework must be arranged to be dropped off on or before the test day either by another classmate who will bring it to class, or by someone else that may drop it off at the math department office during their regular hours (but before our class begins).

## Participation

### Attendance

You are required to attend all classes—please be on time! Excessive absences will affect your overall grade in class. **Students may be dropped from class after two absences, or totaling 7 class hours.** Please note that **3 tardies = 1 absence**, and that if you are more than 20 minutes late or leave before the end of class, you will be marked absent.

### Class Participation

You are expected to participate **ACTIVELY** in class. This means: taking accurate notes, asking questions, and working on classwork. You will be asked to work in groups or present your solutions to the class.

### Time Commitment

A typical student taking a college math course spends an average of 3-4 hours outside of class for every hour in class. Our class meets for approximately 5 hours per week. You will need approximately 15-20 hours per week outside of class to study and/or complete assignments. Be sure that you have the time available to do homework and study; if not, you need to adjust your schedule. Otherwise you will be at a disadvantage and your chance for success in this course will be lower.

# Rules

## Class Rules

### Environment of Respect

To be respectful of everyone in class and understand that everyone has the right to learn.

### Cleanliness

Keep the classroom clean, do not bring food into the classroom and leave no trash.

### Honor Code

Follow the standards of academic honesty and the code of conduct of Pasadena City College. (Please do not even consider cheating or plagiarizing an assignment. This action will have severe consequences which include a zero on the given exam or assignment and having the incident reported to Student Services. The Dean of Student Life can then impose institutional consequences like limiting educational activities, probation, and expulsion from the college. Cheating can include, but is not limited to, copying from a fellow student on an exam or assignment; using your cell phone or other smart device during an exam; letting your eyes wander to your fellow student's paper during an exam.)

## Class Rules

### Cell Phones

You may NOT have your cell phone out during class for any reason. This means: no texting, no phone calls, no apps, etc. **Never photograph or take video or audio recordings** in the classroom unless I specifically allow the class to do so. **PENALTY:** if I see your phone out, on your lap (do you seriously think I don't notice that?) or if it rings, I will give you a warning but each subsequent violation will cost you 5% on your next exam.

### Computers & Tablets

Computers & Tablets are encouraged. However, non-mathematical uses such as using social media, watching videos, is not allowed. **PENALTY:** First violation will receive a warning but each subsequent violation will cost you 5% on your next exam.

### Food & Drinks

Only liquids with a non-spill lid are allowed in the classroom (water bottles, coffee with a lid). Cans of soda/energy drinks/Starbucks coffee are not allowed. Fast food is not allowed in the classroom.

## Exams

Exams are a way for you to show me what you have learned (and please show all your steps so I can see this!) and to give you a sense of accomplishment! They are meant to be challenging and not just homework problems with the numbers changed. I really want to prepare you for university level math classes—so some exams may be longer or more challenging than others. Remember that I do grade fairly and my goal is to push you to succeed and excel in this class. I often give hints in class as to exam problems (another great reason to come to class!), and I will post study guides along with the best way to review for each exam.

- Five exams are given during the semester—see our website for the exact dates. See the homework list for the sections covered.
- **Attendance required for all exams—however, I will drop the lowest exam score, regardless of the reason.**
- **"No Make-up Exams"** for any reason.
- Your **student ID** or a valid **government ID** is REQUIRED for all exams.
- During the exams—you will be required to leave your backpack and all non test items at the front of the room, including cell phones and smart watches. Only your pencil/eraser and calculator will be allowed during the exam, and there will be a calculator check. Should you need to leave during the exam please ask for permission first before leaving and leave your cell phone with me. Failure to comply with these rules could result in a 0 on your exam.
- Once the exam is returned, any problem you would like me to revisit must be brought to my attention by the next class session.
- Always keep your exams!!

### Tentative Test Dates

- Exam 1
- Exam 2
- Exam 3
- Exam 4
- Exam 5
- **Final Exam**

Monday, Sept 16 (Week 4)  
Wednesday, Oct 2 (Week 6)  
Monday, Oct 21 (Week 9)  
Monday, Nov 4 (Week 11)  
Monday, Dec 2 (Week 15)

**Monday, December 9 from 7:45 to 9:45 pm**

- Important note on final exam: attendance is required to obtain a passing grade in this course. Only in extreme cases (and subject to the Dean's approval) will special accommodations be made.
- You must make arrangements to attend and take the final at the above schedule date and time—**no exceptions!** Please note: having a plane ticket that conflicts with your final exam date and time (or other similar travel related reasons) is not considered a valid excuse.

# Getting Help

## Tutoring

### The Math Success Center (R-406)

Free tutoring and math counselors are available! Advice: hang out here! Do your homework here!

### The Learning Assistance Center (D-300)

Keep the classroom clean, do not bring food into the classroom and leave no trash.

### 24/7 Online Tutoring

PCC students get 7 free hours!

## Support

### DSP&S (D-205)

If you have a disability and believe you may need an accommodation such as materials in an alternate format, preferential seating, sign language interpreting/real-time captioning, access to assistive technology and/or test accommodations, per the Americans with Disabilities Act or Section 504 of the Rehabilitation Act please contact Disabled Students Programs and Services in Room D-209 or at 626-585-7127 as soon as possible and feel free to discuss your needs with me in private.

### PCC Success Centers

Check out many more success centers on campus.

### ME!

Don't forget your instructor! Please check out my office hours, ask lots of questions. It is better to ask questions early in the semester rather than later, and please do not be afraid to come by office hours. I hold office hours in the Math Success Center at any free table, and like to use the white boards in the center and work out problems together. If you are struggling, I can only work with you to attempt to find a solution but only if I know that a problem exists—please communicate!

## Tentative Schedule

*This is a tentative schedule for the course and may change as the course progresses.*

Week	Topics Covered
• Week 1	Ch 0, 1.1
• Week 2	1.2, 1.3
• Week 3	1.4, 1.5, 1.6
• Week 4	<b>Exam 1</b> , 1.7, 1.8
• Week 5	1.9, 2.1, 2.2, 2.3
• Week 6	2.4, <b>Exam 2</b> , 2.5, 2.6
• Week 7	2.7, 2.8, 2.9, 3.1
• Week 8	3.2, 3.3, 3.4
• Week 9	<b>Exam 3</b> , 3.5, 3.6

Week	Topics Covered
• Week 10	3.7, 3.8, 5.1, 5.2, 5.3
• Week 11	<b>Exam 4</b> , 6.1, 6.2
• Week 12	6.3
• Week 13	6.4, 6.5, 7.1
• Week 14	7.2, 7.3, 7.4
• Week 15	<b>Exam 5</b> , 7.5, Review for Final

## Course Contract

### \*\*\* IMPORTANT ASSIGNMENT – COURSE CONTRACT \*\*\*

**Instructions:** Please **hand-write** on a separate piece of paper and print your name, the course title, the course section, AND the following statement. Also: SIGN THIS DOCUMENT and turn it in as soon as you certify that you are able to log into Canvas & the course website:

"I certify that I have read the entire contents of the Course Syllabus. I also pledge to regularly check Canvas & the course website for updates and hold myself accountable for the information."



## Suggestions for Effectively Reading Mathematics

### "Read Actively"

1. When confronted with the task of reading a piece of mathematical text, skim the entire reading first to discern its general outline and to identify its main points and objectives.
2. If necessary, review earlier portions of the textbook (or prior mathematical topics studied) to recall forgotten or unfamiliar vocabulary, techniques or theorems before attempting a thorough reading of the current text.
3. Don't rush! Read slowly! Mathematical writing is typically dense with ideas. Spend as much time as necessary to understand the fully intended meaning of each of the author's arguments and examples.
4. Pay particular attention to the precise statement of new definitions and theorems.
5. Do not immediately skip over a portion of the reading that doesn't make sense in the hope that its meaning will become more apparent later. Because of the linear nature of mathematical writing in which one topic builds from those that precede it, it is very important to fully understand one topic before proceeding to the next.
6. Try to identify the cause of any misunderstanding of the topics being studied. Consider all reasonable methods to resolve the misunderstanding. Whenever possible discuss difficult portions of the text with a friend, study partner, or study group.
7. If all else fails, make sure to mark any portions of the text that remain perplexing so that you may raise these issues subsequently in class.
8. Occasionally authors will intentionally leave some details of arguments or examples to the reader to complete as an exercise. Authors do this for pedagogical reasons and not laziness! As a useful check on your understanding of the material, always fill-in the details omitted by the author.
9. Always keep pencil and paper handy whenever reading mathematical text. It can be very helpful to highlight important passages, insert marginal notes to yourself (a la Fermat!), and make simple calculations while involved in the reading of the text.
10. Examples in textbooks often come with a moral. Discern the author's main point in providing the example. Make sure you struggle to understand every aspect of the computation, manipulation, or procedure presented in the example.