

Berkeley City College Fall 2015
Mathematics 3A Calculus I Code: 40355/40771, 5 units
Draft Syllabus

Instructor: Shawn McDougal **E-mail:** smcdougal@peralta.edu
Office Hours: MW 1:30-2:30pm, TTh 11-12pm (plus 1 hr by appointment)
Office Location: Room 353 **Phone:** (510) 981-5018

Class Meeting Days/Times: MWF 9:30-10:50am/11-12:15pm **Location:** Room 322/321

Prerequisites: Math 2, or Math 1 + Math 50, or placement through assessment

Textbook: *Single Variable Calculus: Early Transcendentals* by James Stewart. 7th edition
The textbook is available for purchase in the bookstore (Room 517). The text is also on reserve in the BCC library (Room 131).

Materials: You should obtain a scientific calculator. Access to a graphing utility for some of homework problems is encouraged but not required.

Catalog Description

Theorems on limits and continuous functions, derivatives, differentials, and applications; Fundamental theorems of calculus and applications; properties of exponential, logarithmic, and inverse trigonometric functions, and hyperbolic functions.

Class format

Our typical class will be a mix of lectures clarifying and expanding upon the points raised in the book and the videos, hands-on problem solving sessions, solution presentations (from students as well as me), and open discussion. About half the class will be "workshop"—you will be working on problems individually or in groups as I go around helping as needed. In addition to providing feedback and guidance, I will often ask you to talk through the problems or ideas with other students. Talking through your ideas with others is a good way to 1) test and refine your ideas, 2) learn multiple ways of thinking about a concept or solving a problem, and 3) practice putting the ideas in your own words.

Every day your main homework is to *prepare for class*: you should come to class having already read the section(s) to be covered in class that day, as well as having watched any designated videos. (There will be usually be one to three short—5 to 10 min.—videos for you to watch.) You should take notes on the examples you see in the videos, get a basic idea of the key concepts and theorems in the book, and know where to find things. You are *not* expected to understand everything you read or see the very first time—that is the point of coming to class and doing the follow-up exercises!—but you will be get the most out of class—and you will not be lost—if you come prepared. In class I will give a list suggested "homework" problems to guide your follow-up study, but I will not collect or grade them.

Self-intros

Every day for the first few weeks of the course, 2-3 students will get a chance to briefly introduce themselves to the class. "Briefly" meaning 30 sec. to 1 min. This will allow all of us to get to know a bit about each other. Include an answer to *one* of the following "questions":

- One experience you had after age 13 that really shaped who you are or how you think.
- Something a lot of people who meet you wouldn't guess about you.
- If you could, what is one thing you would change about society?

Grading Allotment

	points each	total points	total percent	notes
Quizzes (5)	24	120	30%	7 drop lowest 2
Final Exam	100	100	25%	
Daily Preps (20)	4	80	20%	~ 28 drop lowest 8
Solution Shares (2)	20	40	10%	
Moodle Check-ins (20)	2	40	10%	29 drop lowest 9
Connections (4)	5	20	5%	

Grading Scale A: 90% - 100 %, B: 75% - 89%, C: 65% - 74%, D: 55% - 64%. F: Below 55%

Daily Preps

Twice a week (usually) there will a *Daily Prep*—a brief (< 5 min.), open notes (and sometimes open book) "quiz". I use quotes because anyone who comes prepared to class—i.e. watches the assigned videos, does the reading, and takes notes on the key points—will easily get full credit. Each *Daily Prep* is worth 4 points (i.e. 1% of the grade). There are no make-ups. To account for the fact that life happens and sometimes folk can't come to class prepared, there are many free passes: out of about 28 *Daily Preps* I will count only your best 20. The *Daily Preps* will take place on Mondays and Fridays except for the week of 9/7 (W and F) and the week of 11/23 (M and W).

Solution Shares

I want to foster an environment where students learn from each other. I also want to help students improve their presentation skills. On two occasions, you will prepare and present for the class a solution to a problem selected from the suggested HW. Each *Solution Share* is worth 20 points (i.e. 5% of the course total). You will choose which problem to present in advance, from a list of options I provide. The presentations will typically last 3-8 min., with another couple of minutes for questions. Grading will be based on clarity, correctness, and timing.. (A rubric will be provided.)

Quizzes

There will be a quiz every two weeks, usually every other Monday (except Quiz 1 will take place on a Friday due to the holiday). There will be 7 quizzes altogether. Each quiz is worth 6% (i.e. 24 points). There are no make-ups. There will be 2 free passes: I will drop your lowest 2 quiz scores, so only your best 5 quizzes will be counted. The quizzes will be mostly based on the suggested HW problems.

Final Exam

The Final Exam is scheduled for Monday, 12/14 in class. It will cover all of the material of the course. Many (even most) of the problems will be taken from the quizzes. It's worth 25% of the course total.

Moodle Check-ins

Almost every week (W1–W16) you are asked to write two Moodle *Check-ins*. The purpose of the *Check-ins* is to 1) encourage folk to discuss the material outside of class, 2) let me know which concepts I most need to clarify in class, and 3) build community among students. For credit, the check-ins must be posted before the end of the week (Sunday midnight) in the appropriate weekly forum.

In order to receive credit, a *Check-in* must be one of the following:

- a *good question* about a problem or concept or example in the book or in a video

- e.g. of good question: "On problem X in section Y I tried to find the slope using the formula $m = \text{change in } x / \text{change in } y$ but got the wrong answer. What am I missing?"
- e.g. of not-so-good question: "I just don't get problem X."
- an *interesting comment* about a problem or concept or example in the book or in a video
 - e.g. of interesting comment: "I wonder how people decide when to fit a line and when to fit a polynomial to a given set of data."
 - e.g. of not-so-interesting comment: "Curve fitting is cool!"
- a *substantive response* to someone else's question or comment.
 - e.g. of substantive response: "Seems there should be some sort of convention or standard around how much error there is when you try to fit a line."
 - e.g. of not-so-substantive response: "Me too!"

You are welcome and encouraged to participate frequently in the Moodle discussions, though you will receive credit for at most two *Check-ins* per week. Each *Check-in* is worth 2 points. Out of about 29 *Check-ins*, I will count your highest 20. So, altogether the *Check-ins* are worth 40 points (i.e. 10%).

Weekly Schedule (tentative)

Week of Monday	Sections	Notes (Quizzes on M, DPs on MF except as noted)
A24--Week 1	1.1-1.3, App.D	
A31	1.5-2.2a	Q1 F
S7*	2.2b-2.3	no school M; DP WF
S14	2.4-2.5	
S21	2.6-2.8a	Q2
S28	3.1-3.2	
O5	3.3-3.4	Q3
O12--Week 8	3.4b-3.7	
O19	3.8-3.11	Q4
O26	4.1-4.3	
N2	4.4,4.5,4.7	Q5
N9*	4.8-4.9	no school W
N16	5.1-5.2	Q6
N23*	5.3-5.4a	no school F; DP MW
N30	5.4b-5.5	Q7
D7--Week 16	6.1 + review	
D14	Final Exam on Monday 12/14	

Important Dates (cf. BCC Spring 2015 Academic Calendar)

Sep. 6 – Last day to add regular session classes.

Sep. 6 – Last day to drop regular session classes (without a "W") and receive a refund.

Sep. 14 – Last day to file for P/NP grading option for regular session classes.

Oct. 23 – Last Day to File Petitions for AA or AS Degree/Certificate

Nov. 14 – Last day to drop with "W". Attendance Verification Day.

Connections Assignments

Connections is an opportunity for students to connect with diverse colleagues outside of class while reflecting on issues relating to math, personal interest, or community interest.

There will be 4 *Connections* assignments, spaced a week apart. The first is due Friday 9/7 (during Week 2, aka "W2"). The others are due on successive Fridays. Each should take 15-30 minutes to complete.

- Each week (from W2 to W5) students will form teams of 2 or 3 people.
- Each team will submit a roughly 2-3 paragraph write-up.
- Either hardcopy or electronic submission (pdf, rtf, or plaintext format) via Moodle "dropbox" is fine. They are due at the beginning of class. (See *Connections Form* for the required info.)
- Each *Connections* assignment is worth 5 points (i.e. 1.25%).
- In order to get credit for N assignments, each student must team up with at least N different people. (So I suggest you don't team up with the same person every week ;^)
- On each team, there are 2 roles: Initiator and Responder. Students choose who plays what role.
 - The Initiator makes the initial remarks to get the conversation started. The Responder (or Responders) responds to or follows up on the comment.

Menu of options

1. a recent experience that has really impacted you
2. something you're confused, curious, or excited about in class
3. news story with (interesting, confusing, problematic) use of math
4. example of how (lack of) math knowledge is used to trick people
5. an issue in the school or community that really bothers you and/or an idea for improving things in the school or in the community
6. interview a "community expert" on how math impacts their work or the way they think ("community expert" meaning someone who works at BCC or in the local community)
7. attend and comment on a school or community event related to math, science, or social justice

Connections Form (template)

Initiator Name:

Responder Name(s):

Date:

Topic: (or Name and Job of Community Expert or Name of Community Event)

Write up:...

Suggested Homework Problems

I will provide a list of suggested HW problems based on the material we cover. If you master the problems you will be well-prepared for the quizzes.

Attendance

Students who miss more than 2 consecutive classes without contacting me to explain their absences may be dropped from the course. Anyone who misses the first 2 class meetings may be dropped. Still, do not assume that I will automatically drop you if you merely stop attending class. Anyone whose name appears on the final grade roster who has not been attending class will receive an F.

Academic Honesty

Any evidence of cheating on an exam or quiz will result in a score of zero (0), and may incur further penalties. Cheating includes but is not limited to bringing notes or written or electronic materials into an exam or quiz, copying off of another person's exam or quiz, allowing someone to copy off of your exam or quiz, and having someone take an exam or quiz for you.

General Information/Expectations

Please turn off your cell phone ringers/alarms during class.

Make sure your preferred email address is listed on Passport and Moodle. For Moodle see <http://eperalta.org/Fall2015/>

I usually don't answer questions about the course material over email. (Reason #1: I don't want to be swamped with emails. Reason #2: I prefer to answer a question once rather than multiple times.) To help you get your questions answered quickly by me and/or other students, and to help students share ideas and build community with each other, you should use the *forums* on Moodle (*not* the messages, which I rarely see.). Also, on Moodle you will be able to review your grades throughout the semester.

Student Learning Outcomes

1. Find limits and use limits and limit laws to determine whether a function is continuous, to find the derivative of a function and to evaluate a definite integral of a function.
2. Find derivatives of polynomial, rational, exponential, logarithmic, trigonometric, and hyperbolic functions and sums, differences, products, quotients, powers, and compositions thereof.
3. Solve application problems including minimization, maximization and rate of change problems; use limits and derivatives to analyze and graph functions.
4. Solve basic integration problems; calculate definite integrals, the area under or between curves; apply the Fundamental Theorem of Calculus to solve real world problems.

Justification for Course

Satisfies the General Education and Analytical Thinking requirement for Associate Degrees. Provides foundation for more advanced study in mathematics and related fields. Satisfies the Quantitative Reasoning component required for transfer to UC, CSUC, and some independent four-year institutions. Acceptable for credit: CSU, UC. AA/AS area 4b, CSU area B4, IGETC area 2A.

Disabilities Statement

Berkeley City College is committed to providing reasonable accommodations for all individuals with disabilities. Any student with a documented disability needing academic accommodations is requested to speak with Programs & Services for Students with Disabilities (PSSD), located in Room 261 and the instructor as early in the semester as possible. I encourage any student who suspect they may have a learning disability to contact PSSD for assistance. They can be reached by phone at (510) 981-2812 or 2813. All conversations will remain confidential. The syllabus and course material are available in alternate formats upon request.