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|  | **Calculus 1**  **Growth Mindset Learning**  **Specifications Grading** |  |

**How will the Calculus 1 class be like?**

In this class, you will learn by actively engaging in Calculus. We will

* do Calculus together as a team and individually, and
* use visualization to make connections with concepts.

**After class**, you will practice understanding Calculus concepts by engaging in homework and collaborative problem-solving sessions called PLTL sessions.

**What is Growth Mindset?**

This class is based on the concept of Growth Mindset, which is the belief that

* we are in control of our skills, and
* these skills can be developed and improved through time (the semester), and
* we have the capacity to learn and grow.

Taken from <https://thelearnerlab.com/growth-mindset/>

Other resources: <https://www.mindsetworks.com/science/Impact> and a [TED talk by Dr. Carol Dweck](https://www.ted.com/talks/carol_dweck_the_power_of_believing_that_you_can_improve?language=en).

**Videos.** Below we provide UTRGV videos that describe the Growth Mindset Pedagogy and the assessment strategy of Specifications Grading that will be used in class:

[English version](https://utrgv.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=67cbe4ea-6a89-4267-a6a4-ad8600fd91af) and [Spanish version](https://utrgv.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=9d7cbab5-113c-4745-b332-ad8601470ec4)

**Learning Targets**

Overall, the most important concepts/ideas of the course are categorized into 23 Learning Targets, 9 of which are Core Learning Targets and 8 are Supplementary Learning Targets and 6 are non-testing Learning Targets.

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| Core LTs  **9** | Supplementary LTs  **8** | Non-testing LTs  **6** |

Since we focus on a Growth Mindset where Learning occurs over time (the semester in Calculus 1), your semester grade will depend on how you learn concepts from the beginning of the semester to the end and become proficient in the Learning Targets, as well as completion of the homework assignments.

Therefore, there are no earned points nor partial credit in this class. Instead, you will have many opportunities to earn credit throughout the semester to show complete and correct solutions of problems of each Learning Target, which will earn you proficiency credit for that Learning Target.

**How do you earn a Learning Target:** The Core and Supplementary Learning Targets will be assessed twice: once through a worksheet in your PLTL session and once through an exam. If you earn proficiency credit on BOTH assessments of a Learning Target, then you can check that Learning Target off your list.  If you miss a Learning Target through a PLTL session or exam, you will have the opportunity to earn proficiency credit through other various means (office visits, Carnival Days), as explained in the next section, and a last opportunity through the Final Exam).

**Which assignments will we have?**

**WeBWorK (due weekly):** WeBWorK consists of online HW assignments that help build understanding of concepts, strategies, and computational skills. Each assignment is due one week after it is assigned; after the one-week deadline, reduced-scoring applies for 2 subsequent weeks and the assignment will be worth at most 85%.

**Worksheets from PLTL Sessions (twice weekly):**  To cement understanding of the material, you will have the opportunity to work in groups (called PLTL sessions) right after the class lecture. For problems that are correct, you will earn credit for a Learning Target. Two PLTL leaders who have experience with Calculus 1 will lead the sessions while you and your peers discuss the problems and solve them. The worksheets will make use of Desmos; hence download the app to your laptop/tablet/cellphone or visit the website [www.desmos.com](http://www.desmos.com) . Worksheet submissions are due at the end of the PLTL session. If your instructors deems any corrections need to be made, you will be allowed to resubmit the worksheet. *You will be allowed to revise and resubmit worksheets within two weeks of the assigned worksheet.*

**Missed Learning Targets**: If you did not attend a PLTL session, then you will have the opportunity to submit the worksheet by visiting with the instructor in their office or attending the Math Lab in EMAGC 1.106. In this setting you will explain the solution to the instructor using appropriate math vocabulary. The instructor will ask questions and may provide a new, similar problem to explain. Visit with the instructor within 1 week of having missed the respective PLTL worksheet.

**Exams:** We will have 4 exams. However, the exams are graded as “Correct” or “Almost There”—meaning you have not received credit; there is no partial credit. For any missed LTs, you can use a Carnival Day to retest on but are limited to retesting on any given LT at most 3 times in the semester.

**Missed Learning Targets**

**Carnival Days:** For any Learning Targets on Exams that were not earned, you will have the opportunity to earn credit on “Carnival Days” which will occur on Fridays, 10am-4:30pm. However, you must abide by the following conditions:

1. You must pass a Readiness Quiz with 85% or higher on the missed Learning Targets that you will test on.
2. You must show that you have at minimum a 65% average on each WeBWorK assignment associated with the Learning Target you will test on.
3. You must sign up in Blackboard no later than Thursday 8pm for the Learning Targets that you plan to take.
4. You can only test on a Learning Target once per Carnival Day which means that you cannot retest on the same Learning Target after it was missed on that particular day. Your next opportunity to retest on the Learning Target will be on the following Carnival Day, which provides at least a week to understand and practice the concepts associated with the Learning Target.
5. On Exam days, no Carnival Days will be provided, that is, no opportunities to retest on past missed Learning Targets will be provided.
6. Resting Learning Targets. Apart from the Exam days,
   * Core LTs---you will have a total of 3 opportunities + Final Exam day
   * Supplementary LTs—you will have 3 opportunities

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| Free Key Clipart Pictures - Clipartix | *Note that you must be present during all 4 Exams and make an effort on all questions in order to unlock the opportunity to retest on Carnival Days.* |

**Absences on Exam days**

In case of illness and in rare cases of other conflicts, students with documented excuses may be allowed to take a makeup exam or wait until Carnival Day to test on the missed Learning Targets from the respective exam; the instructor will decide the most feasible option.

**Final Exam Day:** This is the last opportunity to show proficiency in Calculus 1 on any missed Core Learning Targets. Students who have met the criteria to receive an “A” are exempt from showing up on this day. You can earn at most one credit for each Core Learning Target.

**Earning your grade in the class**

You will earn your grade in the class in the following two ways:

1. Completion of certain percentage of WeBWorK homework, and
2. Earning proficiency credits for Core Learning Targets, Supplementary Learning Targets and Non-testing Learning Targets. One credit can be earned through the PLTL worksheets and another credit through Exams/Carnival Days.

**How assessments work:** Every assessment provides opportunities to show proficiency in specific Learning Targets. You will receive a mark for each Learning Target which consists of:

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| **Mark** | **Effort description** |
| Badge Tick1 outline | **Indicates that the work was correct, complete, convincing, and clear.**  Proficiency credit for the Learning Target was earned and you can check it off in the following sheet to keep track of your Learning Targets. |
| Almost There | **Indicates that there were errors or incomplete work**.  Proficiency credit for the Learning Target was not earned but you are on your way to earning the Learning Target. |

**Semester Grade**: There are a total of 23 Learning Targets with 9 being Core Learning Targets; 8 Supplementary Targets; and 6 non-testing Learning Targets. The following table shows how you can earn the following semester grade which is dependent on earning certain Learning Targets and submitting other assessments. Becoming proficient in Core Learning Targets shows that you have the BIG IDEA that these topics represent. Then the Supplementary Learning Targets consist of the remaining topics of Calculus 1. Together, the credits you earn for Core Learning Targets, Supplementary Learning Targets, Non-testing Learning Targets, and your WeBWorK average make up the semester grade for the class.

Your final grade is determined by the highest row that you fully complete.

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| **Semester Grade** | **Core**  **Learning Targets**  **(out of 9)** | **Supplementary**  **Learning Targets**  **(out of 8)** | **Non-testing Learning Targets (out of 6)** | **WebWork**  **(avg total grade)** |
| A | 9 | 8 | 5 | ³ 85% |
| B | 9 | ³ 5 | 4 | ³ 75% |
| C | 9 | ³ 3 | 3 | ³ 65% |
| D | 10 of any Core/Supplementary | |  | ³ 50% |
| F | Have not fully completed any of the above rows. | | | |

**Examples**: Some examples of grades students might receive under this grading scheme are given below. The red markings denote the condition that was not met and hence the lower grade.

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| **Student Name** | **Semester Grade** | **Core LTs** | **Supplementary LTs** | **Non-testing LTs** | **WeBWorK** |
| Student 1 | A | 9 | 8 | 5 | 95% |
| Student 2 | C | 9 | 4 | 3 | 69% |
| Student 3 | D | 9 | 8 | 1 | 70% |
| Student 4 | D | 9 | 7 | 4 | 60% |

**Learning Targets (LTs)**  (23 LTs: 9 core + 8 supplementary + 6 non-testing) **Fall 2025**

Core LTs are bold-faced in red (which must be met) while the remaining are Supplementary LTs (in green) or Non-testing LTs (in black and do not have a box o). You will need to obtain a combination of core, supplementary and non-testing LTs. Keep track of the Learning Targets by checking the circle ¡ (for credit received from a PLTLworksheet) or the box o (for credit received from an exam) below when you gain proficiency in a learning target.

**Chapter 2: I can calculate, use, and explain the idea of *Limits.***

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| Ex1 | ¡o | **L.1\*** | I can evaluate a limit graphically or numerically including one-sided and infinite limits. (Section 2.2; 4.6) |
| Ex1 | ¡o | **L.2\*** | I can evaluate a limit analytically (using algebra), including one-sided and infinite limits. (Section 2.3; 4.6) |
| Ex1 | ¡o | **L.3** | I can recognize points at which a function is (and is not) continuous and can use continuity to evaluate limits. (Section 2.4) |
|  | ¡ | L.5 | I can identify limits in indeterminate form and can apply L’Hopital’s rule correctly. (Section 4.8) |

**Chapter 3: I understand the *meaning of the derivative.***

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| Ex1 | ¡o | **DM.1** | I can apply the limit definition of the derivative and calculate the derivative at a point. (Section 3.1) |
| Ex1 | ¡ | DM.2 | I can calculate and interpret instantaneous rates of change at a point using graphs and tables, and I can understand the difference between the instantaneous rate of change and the average rate of change.  (Section 3.1; 3.2) |
|  | ¡ | DM.4 | I can sketch the derivative function from the graph of a given function and determine any points of non-differentiability (specifically from ).  (Section 3.2) |
| Ex3 | ¡o | **DM.5\*** | I can find the tangent line to a function at a given point and use this line to approximate function values. (Section 3.1 and 4.2) |

**Chapter 3: I can use multiple *strategies* to calculate derivatives more efficiently.**

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| Ex2 | ¡o | **DS.2\*** | I can use the Product and Quotient Rules to compute derivatives of simple algebraic, trigonometric, exponential, and logarithmic functions in combination. (Section 3.3, 3.5, 3.9) |
| Ex2 | ¡o | **DS.3\*** | I can use the Chain Rule to compute derivatives of simple algebraic, trigonometric, exponential, and logarithmic functions in combination. (Sec 3.6) |
| Ex2 | ¡o | **DS.4** | I can use a combination of the Product, Quotient, and Chain Rules to compute derivatives of simple algebraic, trigonometric, exponential, and logarithmic functions in combination. (Sections 3.5, 3.6, 3.9) |
|  | ¡ | DS.5 | I can compute derivatives correctly using implicit differentiation.  (Sec 3.8) |
| WebWork  only |  |  | I can compute derivatives correctly using logarithmic differentiation.  (Sec 3.9) |

**Chapter 4: I can use derivatives to understand and solve genuine *applications.***

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| Ex2 | ¡o | **DA.1** | I can correctly interpret the meaning of a derivative in context  (e.g. velocity, acceleration). (Section 3.4) |
| Ex3 | ¡o | **DA.2\*** | I can use the Extreme Value Theorem to find absolute extrema of functions. (Section 4.3 & Section 4.5 ) |
| Ex3 | ¡o | **DA.4a** | I can explain the relationship between a function and its first and second derivatives (concavity, increasing/decreasing, points of inflection). (Section 4.5) |
| Ex3 | ¡o | **DA4b\*** | I can apply the First Derivative Test and Second Derivative Test to locate local extrema. (Section 4.5) |
| Ex3 | ¡o | **DA.5** | I can solve related rates problems. (Section 4.1) |
| WebWork  only |  |  | I can solve optimization problems. |

**Chapter 5: I can calculate and explain the meaning of *integrals.***

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|  | PLTL worksheet not graded | FTC.1 | I can compute anti-derivatives correctly using the constant, constant multiple, sum and difference rules of basic power functions, trigonometric, and exponential functions. (Section 4.10) |
| Ex4 | ¡o | **FTC.2** | I can use antidifferentiation to solve initial-value problems.  (Section 4.10) |
| Ex4 | ¡o | **FTC.3\*** | I can evaluate definite integrals exactly by using the properties of definite integrals, graphs and geometry. (Section 5.2) |
|  | ¡ | FTC.4 | I can estimate the values of definite integrals numerically using the left-hand sum or the right-hand sum. (Section 5.1) |
| Ex4 | ¡o | **FTC.5\*** | I can evaluate definite integrals exactly by using the Fundamental Theorem of Calculus (FTC) part 2 with an antiderivative. (Section 5.3) |
|  | ¡ | FTC.6 | I can interpret the physical meaning of a definite integral in terms of net area, net change, displacement, or distance, and state its units. (Section 5.4) |
| Ex4 | ¡o | **FTC.8** | I can evaluate integrals using the Substitution Rule using definite and indefinite integrals. (Section 5.5 and 5.6) |

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| **# of LTs** |  | **Learning Targets**  CORE LTs + Supplementary LTs |
| 4 | Exam 1 | L1 L2 L3 DM1 |
| 4 | Exam 2 | DS2 DS3 DS4 DA1 |
| 5 | Exam 3 | DM5 DA2 DA4a DA4b DA5 |
| 4 | Exam 4 | FTC2 FTC3 FTC5 FTC8 |

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| **Semester Grade** | **Core**  **Learning Targets**  **(out of 9)** | **Supplementary**  **Learning Targets**  **(out of 8)** | **Non-testing Learning Targets (out of 6)** | **WebWork**  **(avg total grade)** |
| A | 9 | 8 | 5 | ³ 85% |
| B | 9 | ³ 5 | 4 | ³ 75% |
| C | 9 | ³ 3 | 3 | ³ 65% |
| D | 10 of any Core/Supplementary | |  | ³ 50% |
| F | Have not fully completed any of the above rows. | | | |

**Keeping Track of Your Progress**

Whenever you become proficient in a Learning Target by earning two credits, one from the recitation worksheet and one from an exam or Carnival Day, you can mark the boxes below beginning with the left-most column and working your way to the rightmost column. This will allow you to keep track of your current standing with respect to Learning Targets; note that WeBWorK also plays a role. The example below shows that you earned all credits for Learning Target L1 as shown by the check marks and thus you became proficient in L1. Then in the Progress Grid below you would mark the box for L1 in the row “Core Learning Targets”.

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| þ | **L.1** | I can evaluate a limit graphically or numerically including one-sided and infinite limits. |
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| **PROGRESS GRID** |  | |
| Core  Learning Targets  (all 9) | L1þ L2o  ….. | |

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| --- | --- | --- | --- | --- |
| **PROGRESS GRID** |  | **Grade C** | **Grade B** | **Grade A** |
| Core  Learning Targets  (all 9) | L1o L2o  DM5o  DS2o DS3o  DA2o DA4bo  FTC3o FTC5o | 9 Core LTs | 9 Core LTs | 9 Core LTs |
| Supplementary Learning Targets  (out of 8) |  | ³3  o o o | ³5  o o | 8  o o  o |
| Non-testing  Learning Targets  (out of 6) |  | ³3  o o o | ³4  o | ³5  o  Optional  o |