

# Characteristics of Successful Programs in College Calculus - Student End

This is a continuation of the national survey of calculus instruction in colleges and universities across the United States. This research project is conducted by the Mathematical Association of America. Whether or not you completed the survey at the start of the term, please complete this survey now. We want to know your thoughts about the calculus class you took this term. Your answers are important to help us determine what works and how calculus instruction can be improved for all students.

Your participation is voluntary and does not affect your course grade. At the end of the survey you will have the option of providing us with your e-mail address and your student ID. If necessary, your e-mail will allow us to arrange a telephone call with you to clarify any responses that are unclear. Your student ID will allow us to match your survey to your final course grade. All information that you submit will be held in complete confidence. All personal information such as your e-mail address, telephone number, and student ID will be disposed of prior to analysis. By continuing on to complete the survey you consent to participate in this study.

If you have any questions about this project, please contact Olga Dixon at (202) 319-8498 or via e-mail [odixon@maa.org](mailto:odixon@maa.org).

## 1. What grade do you expect (or did you receive) in this course?

A     B     C     D     F

## 2. Is Calculus II required for your intended major?

Yes     No     I'm not sure

## 3. Do you intend to take Calculus II?

Yes  
 No  
 I'm not sure

## 4. If you do not intend to take Calculus II, check all reasons that apply.

- I never intended to take Calculus II.
- I changed my major and now do not need to take Calculus II.
- My experience in Calculus I made me decide not to take calculus II.
- I have too many other courses I need to complete.
- To do well in Calculus II, I would need to spend more time and effort than I can afford.
- My grade in Calculus I was not good enough for me to continue to Calculus II.
- I do not believe I understand the ideas of Calculus I well enough to take Calculus II.

## 5. When you started this class, did you intend to take Calculus II?

Yes

No

I wasn't sure

## 6. Select the appropriate response to each of the following:

|   | Strongly Disagree     | Disagree              | Slightly Disagree     | Slightly Agree        | Agree                 | Strongly Agree        |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| This course has increased my interest in taking more mathematics.   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I am confident in my mathematical abilities.  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I am good at computing derivatives and integrals.   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I am able to use ideas of calculus (e.g., differentiation, integration) to solve word problems that I have not seen before. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| My previous math courses prepared me to succeed in this course.   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I enjoy doing mathematics.  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Mathematics is about getting exact answers to specific problems.  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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In the following questions, choose number:

- 1 if you completely agree with option A
- 2 if you do not completely agree with option A, but agree with option A more than option B
- 3 if you do not completely agree with option B, but agree with option B more than option A
- 4 if you completely agree with option B

## 7. Please select the most appropriate response below.

|   | A<br>Not at all certain<br>1 | 2                     | 3                     | B<br>Very certain<br>4 |
|---|------------------------------|-----------------------|-----------------------|------------------------|
| How certain are you in what you intend to do after college? | <input type="radio"/>        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>  |

## 8. Please select the most appropriate response below.

|  | A<br>I try hard to figure it out on my own<br>1 | 2                     | 3                     | B<br>I quickly seek help or give up trying<br>4 |
|--|---|-----------------------|-----------------------|---|
| When experiencing a difficulty in my math class: | <input type="radio"/>                           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                           |

## 9. Please select the most appropriate response below.

|   | A<br>a natural part of solving the problem<br>1 | 2                     | 3                     | B<br>an indication of my weakness in mathematics<br>4 |
|---|---|-----------------------|-----------------------|---|
| For me, making unsuccessful attempts when solving a mathematics problem is: | <input type="radio"/>                           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                                 |

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## 10. Please select the most appropriate response below.

|  | A<br>solve specific kinds<br>of problems | 2  | 3  | B<br>make connections and form<br>logical arguments |
|--|--|----|----|---|
|  | 1  | 2  | 3  | 4   |
| My success in mathematics<br>PRIMARILY relies on my<br>ability to: | j0                                       | j0 | j0 | j0  |

## 11. Please select the most appropriate response below.

|   | A<br>I understand the covered<br>material | 2  | 3  | B<br>I can do things the way the<br>teacher wants |
|---|---|----|----|---|
|   | 1   | 2  | 3  | 4   |
| My score on my<br>mathematics exam is a<br>measure of how well: | j0  | j0 | j0 | j0  |

## 12. Please select the most appropriate response below.

|                    | A<br>I would never take another<br>mathematics course. | 2  | 3  | B<br>I would continue to take<br>mathematics. |
|--------------------|--|----|----|---|
|                    | 1  | 2  | 3  | 4   |
| If I had a choice: | j0   | j0 | j0 | j0  |

## 13. Please select the most appropriate response below.

|  | A<br>memorize it the way it is<br>presented. | 2  | 3  | B<br>make sense of the material<br>so I understand it. |
|--|--|----|----|--|
|  | 1  | 2  | 3  | 4  |
| When studying Calculus I in<br>a textbook or course<br>materials, I tend to: | j0   | j0 | j0 | j0   |

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## 14. Please select the most appropriate answer below:

|  | A   |                       |                       | B                           |
|--|---|-----------------------|-----------------------|-----------------------------|
|  | understand underlying<br>mathematical ideas |                       |                       | find answers<br>to problems |
|  | 1   | 2                     | 3                     | 4                           |
| When solving mathematics problems, graphing calculators or computers help me to: | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>       |

## 15. Please select the most appropriate response below.

|   | A  |                       |                       | B   |
|---|--|-----------------------|-----------------------|---|
|   | work problems so students<br>know how to do them |                       |                       | help students learn to<br>reason through problems on<br>their own |
|   | 1  | 2                     | 3                     | 4   |
| The primary role of a mathematics instructor is to: | <input type="radio"/>                            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |

## 16. Please select the most appropriate response below.

|  | A                                 |                       |                       | B  |
|--|-----------------------------------|-----------------------|-----------------------|--|
|  | waited for a<br>student to answer |                       |                       | answered the question<br>if no one responded quickly |
|  | 1                                 | 2                     | 3                     | 4  |
| When my Calculus instructor asked a question addressed to the whole class, s/he: | <input type="radio"/>             | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                                |

## 17. Please select the most appropriate response below.

|   | A                            |                       |                       | B  |
|---|------------------------------|-----------------------|-----------------------|--|
|   | solved the<br>problem for me |                       |                       | helped me figure out how to<br>solve the problem |
|   | 1                            | 2                     | 3                     | 4  |
| When I asked a question about a problem I was having difficulty solving, my instructor: | <input type="radio"/>        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                            |

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## 18. My Calculus instructor:

|  | Strongly Disagree | Disagree | Slightly Disagree | Slightly Agree | Agree | Strongly Agree |
|--|-------------------|----------|-------------------|----------------|-------|----------------|
| asked questions to determine if I understood what was being discussed. | jn                | jn       | jn                | jn             | jn    | jn             |
| listened carefully to my questions and comments.                       | jn                | jn       | jn                | jn             | jn    | jn             |
| discussed applications of calculus.                                    | jn                | jn       | jn                | jn             | jn    | jn             |
| allowed time for me to understand difficult ideas.                     | jn                | jn       | jn                | jn             | jn    | jn             |
| helped me become a better problem solver.                              | jn                | jn       | jn                | jn             | jn    | jn             |
| provided explanations that were understandable.                        | jn                | jn       | jn                | jn             | jn    | jn             |
| was available to make appointments outside of office hours, if needed. | jn                | jn       | jn                | jn             | jn    | jn             |
| discouraged me from wanting to continue taking Calculus.               | jn                | jn       | jn                | jn             | jn    | jn             |

## 19. During class time, how frequently did your instructor:

|   | Not at all |    |    |    |    | Very often |
|---|------------|----|----|----|----|------------|
|   | 1          | 2  | 3  | 4  | 5  | 6          |
| show how to work specific problems?                   | jn         | jn | jn | jn | jn | jn         |
| have students work with one another?                  | jn         | jn | jn | jn | jn | jn         |
| hold a whole-class discussion?                        | jn         | jn | jn | jn | jn | jn         |
| have students give presentations?                     | jn         | jn | jn | jn | jn | jn         |
| have students work individually on problems or tasks? | jn         | jn | jn | jn | jn | jn         |
| lecture?  | jn         | jn | jn | jn | jn | jn         |
| ask questions?  | jn         | jn | jn | jn | jn | jn         |
| ask students to explain their thinking?               | jn         | jn | jn | jn | jn | jn         |

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## 20. How frequently did your instructor?

|   | Not at all |    |    |    |    | Very often |
|---|------------|----|----|----|----|------------|
|   | 1          | 2  | 3  | 4  | 5  | 6          |
| prepare extra material to help students understand calculus concepts or procedures? | jn         | jn | jn | jn | jn | jn         |
| require you to explain your thinking on your homework?                              | jn         | jn | jn | jn | jn | jn         |
| require you to explain your thinking on exams?                                      | jn         | jn | jn | jn | jn | jn         |
| assign sections in your textbook for you to read before coming to class?            | jn         | jn | jn | jn | jn | jn         |

## 21. My Calculus instructor:

|   | Strongly Disagree | Disagree | Slightly Disagree | Slightly Agree | Agree | Strongly Agree |
|---|-------------------|----------|-------------------|----------------|-------|----------------|
| made students feel nervous during class.                              | jn                | jn       | jn                | jn             | jn    | jn             |
| encouraged students to enroll in Calculus II.                         | jn                | jn       | jn                | jn             | jn    | jn             |
| acted as if I was capable of understanding the key ideas of calculus. | jn                | jn       | jn                | jn             | jn    | jn             |
| made me feel comfortable in asking questions during class.            | jn                | jn       | jn                | jn             | jn    | jn             |
| encouraged students to seek help during office hours.                 | jn                | jn       | jn                | jn             | jn    | jn             |
| presented more than one method for solving problems.                  | jn                | jn       | jn                | jn             | jn    | jn             |
| did not speak English very well.                                      | jn                | jn       | jn                | jn             | jn    | jn             |
| made class interesting.   | jn                | jn       | jn                | jn             | jn    | jn             |



## 22. Indicate how often the following occurred.

|  | Never                 | Some class sessions   | About half the class sessions | Most class sessions   | Every class session   |
|--|-----------------------|-----------------------|-------------------------------|-----------------------|-----------------------|
| My instructor assigned homework.                     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>         | <input type="radio"/> | <input type="radio"/> |
| Homework was collected (either hard copy or online). | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>         | <input type="radio"/> | <input type="radio"/> |
| My instructor gave a short quiz.                     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>         | <input type="radio"/> | <input type="radio"/> |
| My instructor used technology.                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>         | <input type="radio"/> | <input type="radio"/> |

## 23. Which of the following technologies did you use during your calculus class? (*Check all that apply*)

- None
- Graphing Calculator
- Computers
- Clickers or some other electronic response system

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## 24. How frequently were the following technologies used *during* class?

|   | Never                 | Some class sessions   | About half the class sessions | Most class sessions   | Every class session   |
|---|-----------------------|-----------------------|-------------------------------|-----------------------|-----------------------|
| My instructor demonstrated mathematics with a graphing calculator.                                      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>         | <input type="radio"/> | <input type="radio"/> |
| I used a graphing calculator.   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>         | <input type="radio"/> | <input type="radio"/> |
| My instructor demonstrated mathematics with computer algebra system (e.g., Maple, Mathematica, MATLAB). | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>         | <input type="radio"/> | <input type="radio"/> |
| I used a computer algebra system (e.g., Maple, Mathematica, MATLAB).                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>         | <input type="radio"/> | <input type="radio"/> |

## 25. How did you use technology during your class? (*Check only those that apply*)

- To find answers to problems.
- To understand underlying mathematical ideas.
- To check written answers after I worked them out by hand

## 26. How did your instructor use technology during your class? (*Check only those that apply*)

- To illustrate ideas.
- To find answers to problems.
- To check answers after we worked them out by hand.
- To illustrate motion/dynamic animations.

## 27. Does your calculator find the symbolic derivative of a function?

- Yes                       No                       N/A (I don't use a calculator)

## 28. Were you allowed to use a graphing calculator during your exams?

- Yes     No

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## 29. Assignments completed *outside of class time* were:

|  | Not at all |    |    |    |    | Very often |
|--|------------|----|----|----|----|------------|
|  | 1          | 2  | 3  | 4  | 5  | 6          |
| completed and graded online.             | jñ         | jñ | jñ | jñ | jñ | jñ         |
| graded and returned to me.               | jñ         | jñ | jñ | jñ | jñ | jñ         |
| returned with helpful feedback/comments. | jñ         | jñ | jñ | jñ | jñ | jñ         |
| submitted as a group project.            | jñ         | jñ | jñ | jñ | jñ | jñ         |
| challenging but doable.                  | jñ         | jñ | jñ | jñ | jñ | jñ         |

## 30. The assignments completed *outside of class time* required that I:

|   | Not at all |    |    |    |    | Very often |
|---|------------|----|----|----|----|------------|
|   | 1          | 2  | 3  | 4  | 5  | 6          |
| solve word problems.                                      | jñ         | jñ | jñ | jñ | jñ | jñ         |
| solve problems unlike those done in class or in the book. | jñ         | jñ | jñ | jñ | jñ | jñ         |
| use technology to understand ideas.                       | jñ         | jñ | jñ | jñ | jñ | jñ         |

## 31. The *exam questions* required that I solve:

|   | Not at all |    |    |    |    | Very often |
|---|------------|----|----|----|----|------------|
|   | 1          | 2  | 3  | 4  | 5  | 6          |
| word problems.                                      | jñ         | jñ | jñ | jñ | jñ | jñ         |
| problems unlike those done in class or in the book. | jñ         | jñ | jñ | jñ | jñ | jñ         |

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## 32. Please select the most appropriate response for each of the following.

|   | Strongly Disagree     | Disagree              | Slightly Disagree     | Slightly Agree        | Agree                 | Strongly Agree        |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| My Calculus exams were a good assessment of what I learned. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| My exams were graded fairly.                                | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| My homework was graded fairly.                              | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

## 33. During class:

|  | Never                 | Some class sessions   | About half the class sessions | Most class sessions   | Every class session   |
|--|-----------------------|-----------------------|-------------------------------|-----------------------|-----------------------|
| I contributed to class discussions.                        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>         | <input type="radio"/> | <input type="radio"/> |
| I was lost and unable to follow the lecture or discussion. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>         | <input type="radio"/> | <input type="radio"/> |
| I asked questions.   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>         | <input type="radio"/> | <input type="radio"/> |
| I simply copied whatever was written on the board.         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>         | <input type="radio"/> | <input type="radio"/> |

## 34. How often did you do the following?

|   | Never                 | Once a month          | A few times a month   | Once a week           | More than once a week |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Read the textbook prior to coming to class. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Visit your instructor's office hours.       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Use online tutoring.                        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Visit a tutor to assist with this course.   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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**35. Check the box that describes your level of agreement with the following statements.**

|   | Strongly<br>Disagree     | Disagree                 | Slightly<br>Disagree     | Slightly<br>Agree        | Agree                    | Strongly<br>Agree        |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| The homework for the course helped me learn the material.         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| The textbook and/or class materials helped me learn the material. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| The textbook or reading materials for the course were readable.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| I completed all my assigned homework.                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**36. Did you meet with other students to study or complete homework outside of class?**

Yes

No

**37. Did you belong to a calculus study group organized by your instructor or department?**

Yes

No

**38. Does your math department or university provide a walk-in tutor center for mathematics?**

Yes

No

**39. Approximately how many hours per week did you work at a job this semester/term?**

0

1-5

6-10

11-15

16-20

21-30

More than 30

**40. Approximately how many hours per week did you participate in organized extracurricular activities such as sports, college paper, or clubs?**

0

1-5

6-10

11-15

16-20

21-30

More than 30

**41. Approximately how many hours per week did you spend preparing for all classes (studying, reading, writing, doing homework or lab work, analyzing data, or other academic activities) this semester/term?**

0

1-5

6-10

11-15

16-20

21-30

More than 30

**42. Approximately how many hours per week did you spend preparing for calculus (studying, reading, doing homework or lab work) this semester/term?**

0

1-5

6-10

11-15

16-20

21-30

More than 30

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\* **43. What is your home zip code at the time you graduated from high school? *If you graduated from a high school outside the U.S., enter 00000***

\* **44. What is your birth date?**

MM    DD    YYYY

Enter numbers as indicated ->

 /  / 

Optional: We may want to contact you to ask follow-up questions about your math-related experiences. All communications will be kept in the strictest of confidence and your email will NOT be disclosed to any third party.

**45. Your email address:**

Optional: We would like to have your student ID to match surveys to the final course grades. This will allow us to correlate course grades with student responses. We assure you that your identity will not be shared with anyone and that your survey responses will be kept in the strictest confidence.

**46. Your student ID number:**

**47. Is there anything else you want to tell us about your experience in Calculus I?**