



# Module Two



## Sequences and Series

Module Two examines sequences and series. A sequence is an ordered list of numbers that follows a certain rule or pattern, where the  $n^{\text{th}}$  term of the sequence is often denoted as  $a_n$ . A key goal of this module is to determine when a sequence of numbers has a limit. The limit of a sequence refers to the specific value the terms in the sequence are progressively approaching as the sequence grows (i.e., as  $n$  grows to infinity).

A series is the summation of terms in a sequence. As before, if  $a_n$  denotes the  $n^{\text{th}}$  term in the sequence, the series is formed by adding all terms  $a_1 + a_2 + a_3 + \dots$ . As with sequences, we are often interested in knowing if the series converges to a specific number or not.

Many of the core definitions and theorems related to sequences presented in this module will be needed again in Module Three because they are needed to define the concept of a closed set.

0 % 0 of 6 topics complete

Module Introduction



Web Page



Read this information to get started on your module.

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## Module Overview

Web Page



Read the module overview.

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## Reading and Resources

Web Page



Review the module resources.

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## 2-1 Discussion: Final Project Topics

Discussion Topic



Available on Jan 11, 2025 11:59 PM. **Submission restricted before availability starts.**



Possible Points: **25**

The final project in this course is an oral defense of a mathematical proof that you will record using Bongo. You will choose a general topic for the mathematical proof that is connected to the structure of real numbers, sequences, continuity, and differentiation.

Milestone One requires you to write a short paper that describes your chosen topic and explains the method you will use for your proof. That milestone is due in this module.

Review the general topics listed in the [Milestone One Guidelines and Rubric](#) before writing your first discussion post.

Use the feedback that peers and your instructor provide in this discussion as you complete your milestone. In your initial post, address the following questions:

- Which topic are you choosing?
- What interested you about the topic? How does it relate to your field or professional interests?
- Which method of proof are you planning to use?

In your responses, comment on how you might approach the topics your classmates have chosen.

To complete this assignment, review the [Discussion Rubric](#).

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## 2-2 Module Two Problem Set

Assignment



Possible Points: **50**

When you are ready to begin your work, access Codio via the Codio module.

To complete this problem set:

1. Using a Google Chrome browser, navigate to the Codio module in Brightspace.
2. Click on **Module Two Problem Set** to launch Codio's virtual desktop.
3. Click **Start TeXstudio** and **Run TeXstudio**.
4. Once TeXstudio loads, click **File**, select **Open**, and click the **workspace** folder. Click **Open**. Click **module2\_assignment.tex**, and click **Open**.
5. Click the **Build & View** icon to compile the code and generate a PDF.
6. Complete each portion of the template. Type your solutions into the document using TeXstudio, and click

**Build & View** each time to recompile. Note: Be sure to show all steps for arriving at your solution. Just giving a final number may not receive full credit.

7. Export your work as a PDF file and upload it within Brightspace.

Submit your assignment here. For details, see the assignment guidelines and rubric.

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## 2-3 Final Project Milestone One: Topic Selection

Assignment



Possible Points: **25**

The final project in this course is a mathematical proof and oral defense of your presentation. Review the details of that assignment in the [Final Project One Guidelines and Rubric](#).

For this milestone, you will choose the topic for your final project and submit a one-page paper in which you explain which topic you chose and why it is appropriate for an oral defense.

Submit your assignment here. Make sure you've included all the required elements by reviewing the [guidelines and rubric](#).