To the Instructor:

Welcome to ProofSpace! We appreciate your consideration of our site for your purposes.

If you're using ProofSpace as a supplement to your Mathematical Proofs course: We recommend ensuring that students use the definitions *you* provide. Occasionally, our definition may differ from yours.

If you're using ProofSpace as a review of material for another course: You can pretty much do whatever you want. ProofSpace might be useful to an instructor of upper-level math courses; computer science, logic, philosophy, or linguistics courses; or high school mathematics courses. Find the topics that are relevant to your course, and you can have your students watch the associated videos, take the basic Comprehension Quiz problems, or work on the problems in the Problem Set. If you're using ProofSpace in this way, please contact us and let know what you need. We want to know how it does and does not fit your needs.

If you're using ProofSpace as the central part of your Mathematical Proofs course: These resources should provide a solid foundation. There are quite a few advantages for students to learn mathematical proofs in this video/problem format, but perhaps the most important is that they can really go at their own pace. Encourage the students to make a habit of taking notes while watching the videos, the way they would in a standard lecture course. Also encourage them to take their time, pause the videos as necessary, and try the example exercises and proofs in the videos.

Below is a suggested format for how to run a Mathematical Proofs course using ProofSpace, but as you get to know your students, find a format that works best for them and for you. If something isn't working for you, don't be afraid to make changes. ProofSpace was designed with a certain structure in mind, but it was also designed to be as flexible as possible so that you can use it however you see fit.

Here is the original structure that we had in mind as we created ProofSpace. The idea is that students will get most of the introductory instruction outside of class, freeing up valuable class time for working on problems. Each chapter is split up into various sections, and for each section we recommend the following process:

1. **Outside of class**, before the topics are discussed in class, students should:
    a. Get an introduction to the topic by watching the **videos** and taking notes,
    b. Get experience with the basic questions and computational problems associated to the topic by taking the **Comprehension Quiz**.
2. **During class**, instructors should:
    a. Ask students if they have any questions about the videos or quiz problems,
    b. Discuss any topics that he or she feels should be covered in more detail, and
    c. Work through the **Discussion Problems** with the students.
3. **After class**, students should:
    a. Work through the **Evaluated Problems**, and
    b. Get extra practice with the **Supplemental Problems**.

Ideally, the **Discussion Problems** are discussed and completed during class under the guidance of an instructor, teacher, or professor. There are many ways to do this, and you should experiment to see

what works best for you and your students. One possibility is to have students work on the problems individually or in small groups for a few minutes as you observe them and offer guidance, and then have students explain their solutions to the rest of the class. Alternatively, you could discuss the problems with the entire class as a whole, asking them for suggestions on how to proceed. There are many "right ways" to do this, but the main point is that these problems are intended to be discussed by the students and instructor together, so as to prepare the students for the next step, the **Evaluated Problems**. These problems are similar to the discussed problems, often directly related to them or extensions of them. These are the problems that you might have the students write up formally and hand in for evaluation. This **Supplemental Problems** are optional and provide students with extra problems for practice and repetition to help them better understand the concepts and retain the information. Finally, the **Advanced Problems** serve a variety of purposes. Sometimes, they're tangentially related puzzles. Other times, they are extension problems of the topic at hand. Still other times, they introduce a brand new concept that students might see in later mathematics courses. These may be particularly interesting to more advanced students who are seeking a challenge or a deeper look into the current topic.

WeBWorK: As a side note, of course the Comprehension Quizzes are available on ProofSpace as pdfs, but we have also programmed all of the quiz problems into WeBWorK, a free internet-based homework system. If you are familiar with WeBWorK and would like to use it to administer the Comprehension Quizzes, please feel free to download the WeBWorK course from ProofSpace or contact us for information.

Textbook: We recommend supplementing ProofSpace with a textbook. Some students learn better from reading mathematics rather than watching videos. Many other students actually need to learn how to read mathematics. Either way, reading mathematics is important, and we highly recommend Dr. Ted Sundstrom's *Introduction to Mathematical Reasoning and Proof*, which you can find online here:

https://sites.google.com/site/mathematicalreasoning3ed.

Our presentation is different from Dr. Sundstrom's, especially in the earlier chapters, but as a free online resource, it's an excellent second approach for your students. The Supplemental Problems in each problem set refer to the online version 2.0 of this book.

Summary: We have provided sample schedules, videos, computational comprehension quizzes, and problem sets. Please make use of some or all of these resources. And let us know if there are other resources we can provide for you.

If you have a particular idea for a video, we encourage you to make your own videos and submit them for inclusion in ProofSpace. ProofSpace already represents a variety of approaches from the SUNY Geneseo Mathematics Department. We would like to further this diversity with your ideas. Contact us for the LaTeX templates for the videos and other suggestions on how to get started.

We encourage feedback! Please provide us with questions, comments, concerns, constructive criticisms, and compliments by e-mailing us at heap@geneseo.edu.

Thank you for your consideration. We hope ProofSpace serves you well.

~ The ProofSpace Team