

**ATS 580A5: Climate Change Scenarios in Practice**  
(Updated for Fall semester, 2023)

**I. Instruction**

Instructor: Patrick. Keys

Email: [pkeys@colostate.edu](mailto:pkeys@colostate.edu)

Class day and time: T, Th 10:00 to 11:15am

Class location: ATS 101

Office hours & location: TBD

Credits: 3

**2. Course Focus**

This course will provide graduate-level understanding of climate change scenarios, with a focus on equipping students with an understanding of the origin, considerations and applications of climate change scenarios. This course is focused toward graduate students that are actively using climate change scenarios in their research, or those that plan to use them in their professional life. The course will be accessible from multiple disciplines at CSU.

At the end of the course you will be able to:

1. Understand the history of past and contemporary climate change scenarios,
2. Apply your understanding to critique and evaluate existing scenarios,
3. Explore a broad range of climate change scenario applications, and
4. Construct novel scenarios using multiple methods.

**3. Scheduling**

Lectures will be taught on Tuesdays and Thursdays from 10 to 11:15am, in ATS 101.

**4. Course Expectations**

The following list presents the minimum expectations for passing this course (See “7. Grading” for more):

- keep up with the reading
- pass quizzes
- complete assignments on time
- complete group projects on time

**5. Course Web Page**

The course web site will be used for posting lecture notes, homework assignments, and providing additional resources. The course web site is available through Canvas. I recommend bookmarking the web site.

**6. Prerequisites**

Graduate student standing.

**7. Grading**

It is expected that you will spend at least 2 hours of effort outside of class for each hour of class time. You are encouraged to interact with your classmates by sharing ideas and discussing the specifics of the homework, essays, and the projects. You are, however, expected to hand-in your own work, and it may not be a direct copy of your classmate’s (for more clarity, see “10. Academic Integrity” below). The grade breakdown is as follows:

1000 points possible in the course.

~ 15% is regular quizzes

~ 50% is homework assignments

~30% is the Final Project

~5% TBD

The **short quizzes** are intended to gauge your understanding of the readings and lecture material and will be completed in class. The **homework assignments** are intended to gauge your grasp and ability to synthesize the course content. The projects will test your ability to synthesize content from the entire course.

A	100%	to 90%
B	< 90%	to 80%
C	< 80%	to 70%
D	< 70%	to 60%
F	< 60%	to 0%

## 8. Texts & Resources

No purchases required. Journal articles and other freely available materials

## 9. Tentative Weekly Schedule

<i>WEEK</i>	<i>TOPIC</i>
<i>1</i>	Course overview; What is a scenario and why do we need them?
<i>2</i>	History of climate change scenarios: physical dimensions
<i>3</i>	History of climate change scenarios: societal dimensions
<i>4</i>	Integrated assessment modeling
<i>5</i>	Contemporary climate change scenarios: RCPs
<i>6</i>	Contemporary climate change scenarios: SSPs
<i>7</i>	Assumptions and idiosyncrasies of climate change scenarios
<i>8</i>	Analysis of climate change scenarios: Research and discovery applications
<i>9</i>	Analysis of climate change scenarios: Government applications
<i>10</i>	Analysis of climate change scenarios: Sectoral applications
<i>11</i>	Expanding beyond the IPCC — what else is out there?
<i>12</i>	Novel scenario construction - what is needed for a scenario of the future?
<i>13</i>	Final project workshop: Building your own scenario
<i>14</i>	What's next for the future of climate change scenarios?
<i>15</i>	Final project presentations

## 10. Academic Integrity

At minimum, academic integrity means that no one will use another's work as their own. This course adheres to the Academic Integrity Policy of the Colorado State University General Catalog and the Student Conduct Code.