Countdown to 2024

TOTAL Eclipse
On **Monday, April 8, 2024**, a total solar eclipse will traverse North America, casting its shadow across Mexico, the United States, and Canada. This rare event places thirty-one million Americans directly in the path of totality. Remarkably, the next North American total solar eclipse of such magnitude won’t happen again until 2045.

In light of this extraordinary celestial event, our Design 5505 Information Design class (for non-designers) has focused our project on exploring and celebrating the solar eclipse. We invite everyone to welcome the new year by joining us in uncovering fascinating insights about the eclipse. Through the power of visual storytelling, we aim to reveal and share the incredible aspects of this astronomical wonder.

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**Course Instructor + Editor of this Book:**

Yvette Shen
Understanding Solar Eclipses

The 3 Components
A Solar eclipse occurs by collaboration of these three components

How it Works
The Earth rotates around the Sun.

Alignment

The Moon rotates around the Earth.

Solar vs. Lunar Eclipse
In a Solar Eclipse, the moon is located between the sun and earth.

In a Lunar Eclipse, the earth is located between the sun and moon.

Different Types of Solar Eclipse

Total Solar Eclipse
First Contact | Second Contact | Totality | Third Contact | Fourth Contact

Annular Solar Eclipse
First Contact | Second Contact | Anularity | Third Contact | Fourth Contact

Partial Solar Eclipse
First Contact | Partial Phase | Maximum Partial Phase | Partial Phase | Last Contact

Duration of Solar Eclipses Since 2000

Chart showing duration of solar eclipses with data points for past and future years.
Myths

Inuit
Norse
Indian

Aymaran
Batamaliba
Aboriginal

1. The sun woman is in love with the moon man.
2. He does not feel the same, so he runs away.
3. When he escapes her, she covers the world with darkness.

1. Sun and moon argue because of conflict on earth
2. People must resolve their conflicts.
3. Therefore, the sun and moon also resolve their conflicts.

1. Loki is put into chains.
2. For revenge, he creates wolflike giants.
3. One of the wolflike giants swallows the sun.

Eclipse allegedly occurs

*Dates are rough estimates that may lack accuracy. The Aboriginal Australian myth time estimate is based around the Mandjindja people, though Aboriginal groups as a whole have lived in Australia for over 65,000 years.
Scientific Phenomena Observed
during a Total Solar Eclipse

Earthshine
- Sunlight reflected off the Earth onto the Moon’s surface can be seen along with the wispy edges of the corona. The quality of Earthshine provides information about the composition and density of Earth’s atmosphere.
- Observing Earthshine here!

Corona
- The hot, dim, outer layer of the sun’s atmosphere is called the corona. The corona can only be seen during a total eclipse.

Experiments performed on the corona
- During totality, NASA performed 3 experiments to better understand the sun’s corona.

Baily’s beads
- Seconds before and after totality, sunlight shines through irregularities on the Moon’s surface. Astronomers can use stars to predict these irregularities.

Chromosphere
- The Sun’s red lower atmosphere can only be seen during a total solar eclipse, where scientists observe solar flares that can impact satellite communication.

Sunspots
- The sun has a 11-year cycle of sunspot activity, and it will reach its time of greatest activity between 2023 and 2025. Studying sunspots is vital to prevent major climatic changes on Earth.

Diamond ring
- The appearance of the first or last of Baily’s beads allows scientists to understand variations in the Sun’s brightness.

WB-57 jets were able to track the total eclipse from the air and record it for 7.5 minutes.

NASA used 61 telescopes on the ground that were able to capture the complete phases of the eclipse for 82 minutes.

NASA used specialized balloons to capture the eclipse from a unique perspective while also performing experiments.
Nature's Responses to a Solar Eclipse

**By Intelligence**

**COLOR KEY**

- Togetherness
- Awe
- Understanding
- Normality
- Confusion
- Low Energy
- Unease

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**Honey Bees**

- At first, the honey bees are hard at work as usual.
- However, once the sky darkens, the anxious bees stop working and return to the hive in large numbers.
- At peak totality, there is complete silence and not a bee to be seen! There is no movement for a while.
- Finally, after some time the bees dare to slowly venture back out into the world.

**Chimpanzees**

- Solitary females & females with infants are the first to climb to higher ground.
- More chimpanzees join in climbing and orient themselves toward the sky.
- They peer upwards, one juvenile even standing and gesturing towards the eclipse at totality.
- The chimpanzees climb back down and return to their normal behavior.

**Humans**

- During the lead-up to the eclipse, there are more tweets from those who aren't as awestruck.
- As the eclipse nears totality, there's a significant rise in awe-filled tweets from people within the eclipse's path, reflecting a heightened sense of collective experience.
- Following the eclipse, there is a decrease in tweets expressing awe or a greater focus on the collective.

**Big Sagebrush**

- In response to the darkening sky, the plants progressively decrease their photosynthesis and transpiration.
- However, once the light starts to return, the plants are blindsided! This disruption to their circadian rhythm could spell bad news for already drought-ridden plants.

**Effect of Solar Eclipse on the Behavior of a Captive Group of Chimpanzees**

**Observations on the Behavior of Animals During the Total Solar Eclipse of August 31, 1932**

**Hydraulic and Photosynthetic Responses of Big Sagebrush to the 2017 Total Solar Eclipse**
**Plot Highlights**

**The Establishing Shot**
The beginning of the film features a solar eclipse, as well as the cover art.

**The Main Antagonist**
A girl becomes possessed by an alien during a ritual ceremony occurring in the darkness of a solar eclipse.

**The Heroic Adventure**
The climax/confrontation is set during a solar eclipse, known as "The Day of the Black Sun," when the Fire Nation loses its power while the Sun is covered.

**The Transformation**
Main character is sacrificed to the gods, but a solar eclipse occurs, convincing his captors that the gods are satisfied, which results in his release.

**Challenges and Temptations**
The film centers around three children born during an eclipse which results in them having incredibly violent personalities.

**Confrontation**
A direct parody of "A Connecticut Yankee in King Arthur's Court", Bugs Bunny plays the same trick on King Daffy to escape his capture.

**World Introduction**
The film's opening scene features a solar eclipse, which highlights the strangeness of this science fiction world.

**The Return**
Film centers around three children born during an eclipse which results in them having incredibly violent personalities.

**Death and Rebirth**
The final confrontation of the series occurs during a solar eclipse, known as "The Day of the Black Sun," when the Fire Nation loses its power while the Sun is covered.

**Theleyed Journey**
Based on the "Hero's Journey" concept by Joseph Campbell.

**References**
- Egyptian priests lie about a solar eclipse being related to anger of a god as an attempt to revolt the rebellious people.
- Pharaoh lies about a solar eclipse being related to anger of a god as an attempt to mislead the rebellious people.
- A direct parody of "A Connecticut Yankee in King Arthur's Court", Bugs Bunny plays the same trick on King Daffy to escape his capture.

**Eclipse in Films**

**External Timeline**

<table>
<thead>
<tr>
<th>Film Title</th>
<th>Year</th>
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</thead>
<tbody>
<tr>
<td>Fantasia</td>
<td>1940</td>
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<tr>
<td>A Connecticut Yankee in King Arthur's Court</td>
<td>1949</td>
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<tr>
<td>Pharaoh</td>
<td>1966</td>
</tr>
<tr>
<td>Barabbas</td>
<td>1960</td>
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<tr>
<td>2001: A Space Odyssey</td>
<td>1970</td>
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<tr>
<td>The Watcher in the Woods</td>
<td>1979</td>
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<tr>
<td>Little Shop of Horrors</td>
<td>1980</td>
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<tr>
<td>The Seventh Sign</td>
<td>1981</td>
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<tr>
<td>The Land Before Time X</td>
<td>1988</td>
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<tr>
<td>Avatar: &quot;Day of the Black Sun&quot;</td>
<td>2000</td>
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<tr>
<td>Twilight: Eclipse</td>
<td>2006</td>
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<tr>
<td>Apocalypto</td>
<td>2007</td>
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<td>2003</td>
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<td>2006</td>
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<td>2007</td>
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</tbody>
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**Internal Timeline**

**Known**

1. World Introduction
2. Call to Adventure
3. Transformation
4. Challenges and Temptations
5. Transformation
6. Abyss
7. Death and Rebirth

**Unknown**

1. The Return
2. Conclusion

**Plot Highlights**

- The establishing shot at the beginning of the film features a solar eclipse, as well as the cover art.
- The film's main antagonist, Audrey II, first appears mysteriously at a flower shop during a total eclipse of the sun.
- A solar eclipse follows the extinction of the dinosaurs and changes land to ocean and water.
- References the seven seals in the Book of Revelation where the sixth sign is a solar eclipse followed by a catastrophic earthquake.
- Egyptian priests lie about a solar eclipse being related to anger of a god as an attempt to revolt the rebellious people.
- A direct parody of "A Connecticut Yankee in King Arthur's Court", Bugs Bunny plays the same trick on King Daffy to escape his capture.
- Film centers around three children born during an eclipse which results in them having incredibly violent personalities.
- A girl becomes possessed by an alien during a ritual ceremony occurring in the darkness of a solar eclipse.
- Main character is sacrificed to the gods, but a solar eclipse occurs, convincing his captors that the gods are satisfied, which results in his release.
Eclipse Economics

Tourism Change Projections

Projections based on:
(Data: 2017 "Great American Eclipse" in South Carolina)

Solar Eclipse Foot Traffic Change

(Data: 2017 "Great American Eclipse" across USA)

Nights Stayed

(Data: 2017 Solar Eclipse Over Wyoming)

Total Expenditure by Lodging Type

(Data: 2017 Solar Eclipse Over Wyoming)

Wyoming totaled 63.5 Million Dollars in Revenue due to the 2017 Solar Eclipse!
Total Eclipse Safety Guide

- ✔ Eclipse Glasses
- ✔ Welders Glasses

Proper protection at the right time is crucial.

- Use your Pin-hole Projector!
- Welders Glasses

Make your own Pin-hole Projector:

1. Cut a square hole in the box.
2. Cut a circle hole in the box.
3. Tape the box closed.

Protect your Eyes at the Right Time

- Use your Pin-hole Projector!
- Welders Glasses

You can only look at the sun directly during the total phase.

Don’t forget to protect your skin!

Not following these guidelines may result in Vision Loss —

Go see a doctor immediately!
Eclipse@OSU

April 8th, 2024
Columbus, Ohio

The next eclipse viewable from Ohio is in 2111!

Partial Eclipse in Columbus from 3:12 - 3:15pm

Potential Merchandise

2017
“Use a 12-pack box to view Eclipse” social media campaign!

2024
Coca-Cola Moon-Flavored Soda!
Official Sponsor of OSU Dining

2006
Lunar Eclipse shoe design!

2024
Solar Eclipse x OSU shoe design!
Official Sponsor of OSU Athletics

Buckeye Donuts

2017
“Chocolate-glazed” eclipse treat!

2024
Eclipse Donut!
Whipped cream-filled doughnut symbolizing the sun
Dark chocolate glaze representing the moon’s eclipse.
Unofficial OSU Donuts

Recommend viewing locations on campus:
- Horseshoe Stadium
- Mirror Lake
- The Oval

The totality starts around 3pm
Leave before 12:45pm to 2:45pm to reach the path of totality in Ohio

Eclipses Visible From Ohio

Sep. 18 1838
Aug. 13 1869
Mar. 22 1870
The Ohio State University is established

Jul. 20 1969
Humans land on the moon

May 10 1994

Aug. 21 2017

April 8th 2024
The greatest celestial event in your lifetime!

Unofficial OSU Donuts

Columbus, Ohio

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