




**MAKE THAT
COURSE**

Paleontology

A study of prehistoric
life during the Mesozoic

A series of horizontal lines in teal and light blue colors, located on the right side of the slide, extending from the left edge of the text area.

What can I learn by completing this course?

- You will learn....
- Basics of Mesozoic Paleontology
- Information about many species
- Evolution and the Earth 65mya
- Life as a whole back then
- The life of a Paleontologist
- Theories and some basic science

How to get the most out of this course...

- Do the Tasks I will assign you
- Devote as much time as you need to completing it
- Email me if you have questions (paleontologycourse@gmail.com)
- Enjoy the subject whilst doing it!

Paleontology Dictionary

- **Paleontologist:** Person who studies prehistory.
- **Carnivore:** Animal that eats meat.
- **Herbivore:** Animal that eats plants.
- **Bipedal:** Animal that walks on 2 legs.
- **Quadrupedal:** Animal that walks on 4 legs.
- **Theropod:** Bipedal carnivore like Tyrannosaurus
- **Sauropod:** Quadrupedal herbivore with long neck and tail like Apatosaurus.

-What We Will Cover In This Course-

- .The 3 time eras the Mesozoic took place over, The 3 groups of animals that lived within these era's.
- .How fossils are formed, what they can tell us and their locations.
- .Closest relatives today, different family groups, common or more dominant species
- .Unique/personal favorites, Info on others, and just generally talk about size, weight, habitat, lifespan etc
- .Important Paleontologists, paleontological inaccuracies, most important discoveries
Descendants/ ancestors of of the 3 groups

Step 1: The 3 time eras the Mesozoic took place over, The 3 groups of animals I will talk about.

Result 1: By completing this you will understand the basic system of the Mesozoic

Benefit 1: This will show you the different classes of animals in an environment

Step 2: How fossils are formed, what they can tell us
and their locations.

Result 2: By doing this you will understand what
fossils are and how they form

Benefit 2: This will show you the fossilisation
process

Step 3: Closest relatives today, different family groups, common or more dominant species

Result 3: You should know the names of several groups and their members

Benefit 3: This shows the family groups of animals and how they socialized.

Step 4: Unique/personal favorites, Info on others, and just generally talk about size, weight, habitat, lifespan etc.

Result 4: You should know the full amount of information on some creatures

Benefit 4: You will know how to display information about animals.

Step 5: Important Paleontologists, paleontological inaccuracies, most important discoveries

Result 5: You will know at least 3 paleontologists, their discoveries and theories

Benefit 5: This shows you the lifestyle and career of a paleontologist

Step 6: Descendants/ ancestors(how they evolved from dinosaurs) mysteries we still hav'nt solved

Result 6: Know about some of the controversial topics in paleontology

Benefit 6: You will know how to test for bias in information.

Step 7: Revision/overview of all topics and steps

Result 7: You will have revised this entire course and if done well, you will be fully experienced and understand paleontology

Benefit 7: You would have completed this course in Paleontology.

Lesson One: Life 65mya +



"What We Will Cover In This Lesson"

Discussion of time eras + animals

How long each era lasted +
creatures that lived within them

Talk about the three groups
Talk about the Earth and land at the time

The Mesozoic

- The Mesozoic was a colossal time period lasting from 252 mya – 65mya. It is most often dubbed, “the age of the reptiles”
- It was divided into 3 smaller ones called the Triassic, Jurassic and the Cretaceous.
- There will be 3 groups of animals that lived during this time I will cover. They are the Dinosaurs, Pterosaurs and Marine Reptiles

How long was each time Era?

- **Triassic** 252mya-200mya: This gave rise to the first reptiles. Dinosaurs were small and heavily outnumbered.
- **Jurassic** 200mya-145mya: This was called “The golden age of the dinosaurs” It gave rise to the biggest and most prevalent species yet.
- **Cretaceous** 145mya-65mya: There was an explosion of new groups that thrived, whilst others died out.

Dinosaur Overview

- The dinosaurs were a group of now-extinct animals that lived during the Mesozoic.
- They are most commonly split in 2 groups, The “lizard hipped” and the “bird hipped”
- They dominated the Earth for over 170 million years before dying out.
- Notable groups: Hadrosaurs, Sauropods, Allosaurs and Spinosaurus.

Pterosaur Overview

- Pterosaurs were another group of reptiles that lived during the Mesozoic. They were known for being able to fly.
- Despite popular belief, they were NOT dinosaurs or birds.
- They became prevalent in the Jurassic and were also Numerous in the Cretaceous.

Marine Reptile Overview

- Marine reptiles were the final group of reptiles during the Mesozoic. They were also not Dinosaurs.
- They dominated oceans, rivers and lakes often preying on each other. Some grew to be truly gigantic, horrifying and downright bizarre.
- Notable groups: Plesiosaurs, Ichthyosaurs, Pliosaurus and Mosasaurs.

Pangaea

- Pangaea was a supercontinent during the Triassic. It consisted of all continents today joined together. It began to split in the Jurassic.
- The Earth lacked poles at the time and was generally much warmer.
- Pangaea had vast deserts, conifer plants and rainforests just like today.

Resources 1.

https://www.youtube.com/watch?v=ZoHO3fAj_78

This video explains the Mesozoic very well. Watch it in your own time if you want.

Task One

Locate where your current house would be on
Pangaea
Find out some animals that would have lived
nearby.

"Quick Recap Of This Lesson"

Discussion of time eras + animals

How long each era lasted + creatures that lived
within them

Talked about the three groups

Talked about the Earth and land at the time
(Pangaea)

Lesson Two: Digging up the Past

A decorative graphic consisting of several horizontal lines of varying lengths and colors (teal, light blue, and white) extending from the right side of the slide.

"What We Will Cover In This Lesson"

What are/ different kinds of fossils
Fossilisation process

Why some fossils end up on cliff faces

What they can tell us about the creature they used
to be

What are fossils

- Fossils are the remains of plants or animals imbedded and preserved in rock.
- Normally when an animal dies, everything would rot away. Bones and all.
- But under the right conditions, an animal will leave its mark behind to be found.
- Fossils don't have to be remains however, they can also be footprints and nest sites.

Fossilisation Process

- An animal will only be preserved if it dies within the right conditions.
- It needs to be buried quickly so that it will leave its shape behind in the mud or sand.
- This includes.. Sandstorms, tides pushing sand, avalanches, mudslides and rainstorms.
- Over millions of years the mold left behind is replaced with rock, creating a cast of the animal.

Why fossils can be found on cliff faces

- Sometimes footprints or imprints left behind by animals are found on the side of a cliff.
- They didn't walk up the cliff, instead they once left their footprints behind on flat ground.
- Due to 2 tectonic plates pushing each other upwards, The once flat ground is also pushed up until it forms the side of a cliff.

What can fossils tell us?

- By measuring how far or how deep 2 footprints are, we can find out the animals speed.
- Counting the rings of fossilised tree logs can tell us the trees age.
- By examining an animals dung or stomach contents, we can find out its diet.
- The skull can tell us its brain capacity and bite force. If enough of the animal is found, we can estimate its size and weight.

Resource 2.

https://www.youtube.com/watch?v=bRuSmxJo_iA

This video shows the fossilisation process in depth

Task 2. Draw a diagram of the fossilisation process and explain

Draw a diagram of the fossilisation process and explain

"Quick Recap Of This Lesson"

What are/ different kinds of fossils
Fossilisation process

Why some fossils end up on cliff faces

What they can tell us about the creature they used
to be

Lesson Three: Family groups

A decorative graphic consisting of several horizontal lines of varying lengths and colors (teal, light blue, and white) extending across the width of the slide.

"What We Will Cover In This Lesson"

Talk about different family groups

How they each adapted and spread

Most dominant ones of the time

How some declined through the time eras

Various groups

- Not all animals were completely different. Sometimes there were several different reptiles that had many similarities but were still different.
- These were called “family groups”. Eg sauropods were all massive, had long necks and tails, ate plants and walked on 4 legs (quadrupedal)

How they started and spread.

- Family groups often start out with just one animal, but some moved to different areas, adapted to their new habitat and evolved changing slightly.
- They still kept most of their ancestors original features but had some new ones that would be passed down or forgotten by their descendants.

Prevailant groups

- During the Triassic non dinosaurs like Archosaurs and aetosaurus were very dominant. Extinctions killed off everything.
- In the Jurassic sauropods grew to their largest ever and stegosaurs thrived everywhere.
- In the Cretaceous the sauropods declined whilst some carnivores and hadrosaurs flourished under these new conditions.

Resource 3. <https://www.livescience.com/58374-updated-dinosaur-family-tree.html>

Another great video

Task 3. What reptiles or family groups would be found your area or country

"Quick Recap Of This Lesson"

Talk about different family groups

How they each adapted and spread

Most dominant ones of the time

How some declined through the time eras

Step 4. Unique/personal favorites, Info on others,
and just generally talk about
size, weight, habitat, lifespan etc

Lesson Four: The ones that stood out



“What We Will Cover In This Lesson”

Unique/revolutionary creatures

Personal favorites

The record holders in

size,weight,speed,intelligence etc

Unique Animals

- Therizinosaurus
- Helicoprion
- Tupandactylus
- Stethacanthus
- Citipati
- Shunosaurus
- Kentrosaurus
- Quetzalcoatlus (size)

Personal Favorites

- Spinosaurus: This is currently the largest land predator known. The original fossils were destroyed during WW2 but this name lives on.
- Liopleurodon: This ferocious Pliosaur is very puzzling. Most scientists agree that its at least 5-7m long but one reconstructed jaw suggest it is actually 25m long making it the largest amrine predator ever to exist?

Record Holders

- Largest Dinosaur: Dreadnoughtus, Argentinosaurus, Seismosaurus, Supersaurus.
- Strongest Bite: Tyrannosaurus
- Fastest: Ostrich
- Most Intelligent: Troodon
- First Discovered: Megalosaurus
- Longest Claws: Deinocheirus
- Biggest Flyer: Quetzalcoatlus

Resource 4.

<https://www.teachingideas.co.uk/statistics/dinosaur-fact-cards>

I know this seems basic, but it was the only proper image I could find of the classifications of reptiles

Task 4. Select your favorite creature and write down some facts about it

"Quick Recap Of This Lesson"


Classification of these reptiles

Unique/revolutionary creatures

Personal favorites

The record holders in
size, weight, speed, intelligence etc

Lesson Five: Who discovered this?

A decorative graphic consisting of several horizontal lines of varying lengths and colors (teal, light blue, and white) extending from the right side of the slide.

"What We Will Cover In This Lesson"

Lifestyle of a paleontologist

The greatest ones of our time

Important discoveries

Paleontological inaccuracies

Lifestyle of a Paleontologist

- A paleontologist is a person who studies prehistoric life. (heavily depends on fossils)
- You gotta know your fair share of mathematics and science to get the job.
- You can work from home for most of the year, but most people work on the site in the summer months.

The greatest ones of our time

- **Mary Anning** (1799-1847): Mary Anning was the first person to discover a full fossilised Ichthyosaurus. She also found a Plesiosaurus
- **Gideon Mantel** (1790-1852): He discovered the second dinosaur to be named Iguanodon. His theories sparked the study of dinosaurs.
- **Jack Horner** (1946): He proved his theory that dinosaurs cared for their young when he discovered and named Maiasaurus.

Greatest Paleontological Discoveries

- In 1979 Walter Alvarez and his father came up with the idea that an asteroid collided with the Earth and killed the dinosaurs.
- In 1991 William Hammer discovered Cryolophosaurus in ANTARCTICA. This proved Antarctica was once much warmer.
- Jack Horner proving dinosaurs cared for their young.

Paleontological Inaccuracies

- Dinosaur bones were once thought to be the remains of Giants, Giant apes and Dragons.
- Early paleontologists believed that theropod dinosaurs walked upright like humans and dragged their tails on the ground like crocodiles.
- They believed sauropod dinosaurs were too large to hold their own weight and instead lived mostly underwater.

Resource 5.

<https://www.youtube.com/watch?v=8z8eKzLN9aY>

This one simply shows how ideas change over time

Task 5

Select one Paleontologist and do a mini project on them. It could be one I mentioned or another one of your choice.

"Quick Recap Of This Lesson"

Lifestyle of a paleontologist

The greatest ones of our time

Important discoveries

Paleontological inaccuracies

Lesson 6: Birds are more reptilian than you think.

A decorative graphic consisting of several horizontal lines of varying lengths and colors (teal, light blue, and white) extending from the right side of the slide.

"What We Will Cover In This Lesson"

Birds-their similarities to dinosaurs

Proposed theories on birds alongside dinosaurs

Examples of birds that lived at the same time

Things we still don't understand about the Mesozoic

What makes a chicken a dinosaur?

- Many were feathered and had strong claws on their feet.
- They both had hollow bones.
- They laid eggs and built nests to raise their young.
- Theropods were bipedal just like them.
- Their lungs were similarly structured.

Can we clone dinosaurs from Chickens?

- The basic idea is to reverse engineer chickens to undo millions of years of evolution.
- They need arms with claws, a functioning mouth with teeth, a bony tail.
- Scientists do believe this idea is possible, but very hard due to a lack of dinosaur dna.

Prehistoric birds

- Archaeopteryx was considered the first bird for a very long time. However it had a mouth full of teeth and claws on its wings.
- Ichthyornis was much closer as it had a keelbone like modern birds and even a boxlike rib structure. It still had teeth however.
- Vegavis was a goose-like prehistoric bird. Its discovery proved that some of today's birds had ancestors in the Cretaceous.

Hoatzins

- Hoatzins are small colorful birds found in South America. What makes these creatures mind blowing is that their young have claws on their wings just like their ancestors in the Mesozoic!.
- Scientists believe these birds are the last survivors of a family of birds that evolved 64mya. Their connection to this family connects them to other animals like Archaeopteryx.

Resource 6.

https://www.youtube.com/watch?v=4pU9O_LFxmK

Task 6.

Take a look at Hoatzins and see why they are such incredible animals.

"Quick Recap Of This Lesson"

Birds-their similarities to dinosaurs


Hoatzins

Examples of birds that lived at the same time

Can we clone dinosaurs from chickens.

Revision

(you are pretty much complete)

A series of horizontal lines of varying lengths and colors (teal, light blue, white) extending from the right side of the slide.

Revision/overview of all topics and steps

"Course Recap"

The 3 time eras the Mesozoic took place over, The 3 groups of animals

How fossils are formed, what they can tell us and their locations.

Closest relatives today, different family groups, common or more dominant species

Unique/personal favorites, Info on others, and just generally talk about size, weight, habitat, lifespan etc.

Important Paleontologists, paleontological inaccuracies, most important discoveries

Descendants/ ancestors(how they evolved from dinosaurs)

Other life forms that existed at the time like birds

Revision/overview of all topic steps

Congratulations on completing the course!

Thank you so much for taking the time and dedication to complete this course.

Creating this was such an ambitious project for me. I threw out or came up with new ideas for quite a while before settling on this one. I was very happy with my choice and I hope you think the same

Thanks for being a part of this