Welcome students.

In this module, we're going to learn about Earth's magnetism.

How earth behaves like a magnet? What are lines of force,

inclination and declination

And the difference between geomagnetic axis and

geographic axis.

We're going to learn about Earth's magnetic field, and

it's importance

And also the factors which are used to measure the

Earth's magnetic field.

Earth as a magnet. The Earth acts like a grid spherical

magnet. It is surrounded by magnetic field.

I'm sure most of us must have done that experiment when we

were in school by placing a bar magnet below paper and

then sprinkling some iron filings on top of it

So all these iron filings would align

in particular direction.

The same way we have the Earth.

Where in the magnetic field is not constant throughout, but

it varies with in strength and direction with time and at

different locations.

The axis. of the magnetic field is offset.

From the earths rotation axis by approximately 11 degrees.

And this dipole has been

constantly moving. ever since the geological time.

If you look into this figure.

The red line over here is the geomagnetic axis and

the green line over here is the geographic axis.

We have the geomagnetic field, which is generated by

processes within the interior of the Earth.

The geographic axis is the axis along which the earth rotates.

Well, geomagnetic axis is the

axis. Where we have the poles, wherein the lines of magnetic

field move in and out.

The Earth's magnetic field can be described by the

following factors. That is the magnetic declination,

inclination, horizontal intensity and vertical

intensity. These are denoted by the letter D,I,H&Z

respectively.

At the magnetic poles, the deep

Needle points vertical. The

horizontal intensity. Is zero and a compass does not show

direction And D is undefined.

So at the North magnetic pole, the pole.

The North End of the tip of the Deep Needle will point

vertically downwards, whereas at the South magnetic pole, the

North End is vertically upwards.

At the magnetic equator.

On the other hand.

This same dip.

Or inclination is zero, as the needle arrests horizontal.

An it points to the North

magnetic pole. So that is the difference we are going

to observe if we are going to take the dip reading at

the different places that is at the North magnetic

Pole, the South magnetic pole and at the equator.

Now let us have a look at magnetic inclination and

declination.

When the magnetic North is measured in the East of the true

North or the geographic North.

It is denoted by positive sign.

When the magnetic North.

Is marked to the West of the geographic North or

the true North. It is given by negative sign.

The magnetic inclination over here.

Is given.

Is measured with respect to a horizontal.

That is, when the needle moves downwards.

We call it positive and when the needle move upwards it is

called negative or denoted by these signs.

So to define magnetic declination, is the angle

between magnetic North and true geographic North It is

considered positive when measured in each of the two node

and negative when measured in the West of True North magnetic

inclination is the angle between horizontal plane and the total

field vector. It is measured positive when downwards and

negative when upwards.

So to summarize, in this module we have learned about.

The Earth's magnetic field, how

How the Earth's magnetic field resembles a bar magnet. Also,

the difference between the Earth's magnetic axis and the

geographic axis. Magnetic inclination and declination.

These are the references, thank you.