Encouraging Participation:
Some techniques for encouraging student participation

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Showcase Shift and Share Session

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1 What is Participation?

What does participation mean in online lectures and office hours?

What do you want out of your students?

What are you expecting from your students?

Let's brainstorm, maybe think about the things you don't like or the things that frustrate you.

If you rush, they can't participate.

If they feel uncomfortable, they will not engage with you.

If they feel the environment is hostile or judgmental, they will hide.

If there is no culture of participation, they will feel awkward about participating.

If you rush, they can't participate.

Good organization saves time.

Find places for them to participate.

How might you select such places?

If they feel uncomfortable, they will not engage with you.

Work with what you have.

Prime the pump!!!

What does this mean?

If they feel the environment is hostile or judgmental, they will hide.

This is easy, just be supportive!

If there is no culture of participation, they will feel awkward about participating.

Prime the pump early on!

How might you do this?

3 Example (I Hope)

Consider the parametrization of the sphere given by

$$\vec{X}(\theta, \phi) = (R\cos(\theta)\sin(\phi), R\sin(\theta)\sin(\phi), R\cos(\phi))$$

where R is the radius, the angle θ is the longitude and ϕ is the latitude down from the z-axis.

Computing the Christoffel symbols for this parametrization the geodesic equations become

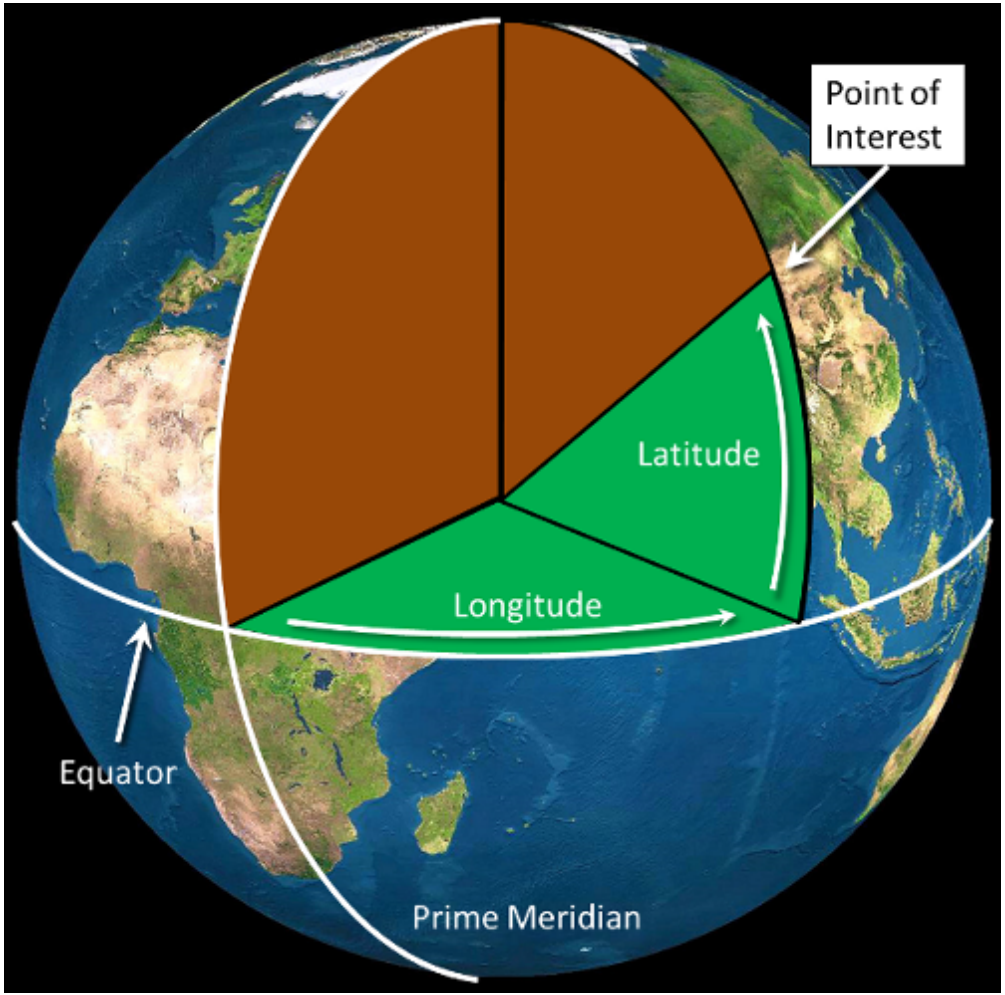
$$\frac{d^2\theta}{ds^2} + 2\cot(\phi)\frac{d\theta}{ds}\frac{d\phi}{ds} = 0,$$

and

$$\frac{d^2\phi}{ds^2} - \sin(\phi)\cos(\phi)\left(\frac{d\theta}{ds}\right)^2 = 0.$$

Solve the above equations to find the paths determined by the geodesic equations.

Very easy for some students to disengage!


Point of Interest
Latitude
Longitude
Equator
Prime Meridian

Visualizing the shortest paths.

References

[1] T. Banchoff and S. Lovett: *Differential Geometry of Curves and Surfaces*. Natick, MA. AK Peters, LTD (2010).

[2] *Geospatial Activities: Latitude and Longitude*. Humboldt State University, gsp.humboldt.edu/olm/Lessons/GIS/01%20SphericalCoordinates/LatLonOnEarth.png.