**GEOG 3231/5231**

**Project 2: Projections**

***Reprojecting data***

50 Points

Due: Sept 15

This exercise will provide you with more practice in working with projections, using the same methods we applied for the in class projections project.

**Data source** for the *World\_Countries* shapefile is Thematic Mapping.org

1. Download & extract the prjct2\_projections folder.
2. Start a new AcrMap project and save it to your C: drive projections folder.
3. Examine the *World\_Countries* layer to determine the spatial reference.
4. Drag the layer into the map & examine the data frame coordinate system properties.
5. Change the data frame coordinate system to ***Mercator (world)*** projection – the map will redraw to reflect this new projection.
6. Export using data frame spatial reference OR use the ArcToolbox “Project” tool to create a new *World\_Countries* that has a Mercator projection.
   1. Name it accordingly to reflect the projection (Mercator).
7. Repeat steps 5 and 6 twice to create reprojected country shapefiles, one with ***Robinson (world)***& one with ***Mollweide (world)***projection, again naming each accordingly.
8. Insert three new data frames, named for the three new layers (Mercator, Robinson, Mollweide).
9. Bring the corresponding newly exported world countries layers into each.
10. Remove the original data frame containing the *World\_Countries* layer.
11. Set all three data frames to the same scale (\*Note: countries will not appear the same size).

\*\*\* **Deliverable**\*\*\*\*

* Make a map with the 3 data frames, one for each projection, in one layout.
  + Use gridlines in each data frame, set with appropriate latitude/longitude spacing
* Create **subtitles and text boxes** to clearly identify the following:
  1. The map **projection family** of each projection
     1. Is it conformal, equal area, azimuthal, equidistant, compromise…?
  2. Which one of the 4 **main map properties** are preserved by each
     1. Either shape, area, distance, or direction OR a combination.
  3. Why the **size of each map is different**, yet the **same scale** is applied to all

*\*Refer to the* ***Intro to Map Design\_ESRI*** *document, the* ***Map projection properties*** *link****,*** *the lecture, and other supplementary resources on D2L for clarification.*

* Use **one scale bar** (hence the same scale) for all three maps.
* Add all appropriate map elements and adjust layout formatting to ensure the information displayed is clear and completely identified.
  + \*Note – legends are not needed for this map.
  + \*Also note – projection information will be specific to each data frame & should be identified in your subtitles.
* Save your map, export to **pdf** & upload to D2L.