**Lecture-Level learning goals for *Waves***

**UBC EOSC 114, *The Catastrophic Earth-Natural Disasters***

Day 1

* Identify key properties of waves
* Use these properties to determine wave speed and behavior in either shallow or deep water
* Explain how waves move matter and energy
* Describe the forces that generate waves, eliminate waves, and return the ocean to a flat surface.
* Explain the factors that determine the roughness of the sea

Day 2

* Define wave breaking, and determine when a wave will break.
* Explain differences between plunging and spilling breakers.
* Predict the type of breaker that will be found on a given beach.
* Describe how coastlines affect waves, and how waves affect coastlines.
* Compare the effects of breakers, groins, seawalls, and other structures on coastal erosion.

Day 3

* Determine how two waves will interact, and explain constructive and destructive interference.
* Discuss wave reflections, standing waves, and resonance.
* Relate wave interference and resonance to marine hazards.
* Explain how a tsunami differs from more common ocean waves.

Day 4

* Discuss why tsunami come ashore so violently.
* Describe how tsunami form.
* Identify tsunami warning signs, and know how to respond.
* Describe the processes responsible for a storm surge, and identify where in a hurricane the maximum surge will occur.

Day 5

* List 2 causes of eustatic changes in sea level.
* List 2 causes of regional changes in sea level.
* Relate these changes to risks for coastal communities.
* Describe the impact of sea ice and permafrost melt on erosion in the Arctic.
* Describe the impact of Mississippi erosion efforts on New Orleans.