

CIVL-558 Homework Assignment #2

- 1.1) Shown below are data representing the frequency of earthquake occurrences in California. Use these data to perform the following tasks;
- Develop a table showing N , the number of earthquakes per year having a Richter magnitude M or greater. Plot N versus M using a semi-log scale. Obtain a recurrence formula of form $\text{Log}(N) = a + bM$. Plot the formula with the data. (*Use base-10 logarithms!*)
 - Plot on semi-log paper the return period, $1/N$, of the earthquakes having magnitude M or greater. Obtain and plot with the data a formula for the return period in the form $\text{Log}(1/N) = a + bM$
 - Based on these data, over the next five years what is the chance that an earthquake comparable in magnitude to the San Francisco 1906 event will occur somewhere in California? Over the next fifty? Use a Poisson distribution for your projections.

Earthquake Data for California, 100 – Year Interval

<u>ΔM, Magnitude Interval</u>	<u>N_1, Number of Earthquakes</u>
4.75 – 5.25	250
5.25 – 5.75	140
5.75 – 6.25	80
6.25 – 6.75	40
6.75 – 7.25	19
7.25 – 7.75	8
7.75 – 8.25	2
8.25 – 8.75	1