University of California, Los Angeles
Department of Statistics

Statistics C173/C273 **Instructor: Nicolas Christou**

Lab 4

Access the calcium and magnesium data: Calcium and magnesium contents in soil samples at the $0-20$ *cm* and $20-40$ *cm* soil layers were measured at 178 locations. Variables of interest here: `east, north, ca020`.

```
a <- read.table("http://www.stat.ucla.edu/~nchristo/statistics_c173_c273/
     soil_ca_mg_data.txt", header=TRUE)
```

After you access the data create the following data frame:

```
data <- as.data.frame(cbind(a$east, a$north, a$ca020))
names(data) <- c("east", "north", "ca020")
```

a. Create a grid using the data above (use `by=10`).

b. Use the `idw` function of `gstat` to predict the data points of your grid.

c. Collapse the predicted values into a matrix and use the `image` function to create a raster map. Add contours to this raster map.

d. Use the `krige` function of `gstat` to fit a surface (1st and 2nd) order to your grid.

e. With the `image` function create a raster map of the predicted values and a raster map of variances of the 2nd order surface.