Project 1: "Info Mesh"

The main goal of this project is to implement a Python script for Blender that outputs the following information about the active object:

- The **area** of the surface of the object
- The (x,y,z) coordinates of the **centroid** of its vertices
- The maximum, minimum and average **degree of the mesh vertices** (degree of a vertex = number of edges incident at the vertex).
- The number of **edges**, the number of **boundary edges** (those shared by a single face), the number of **edges shared by exactly two faces**, and the number of **edges shared by more than two faces**.
- The number of **concave edges**, the number of **convex edges**, the number of **planar edges** (shared by coplanar faces), and number of **other edges** (boundary edges, non-manifold edges…)
- The following magnitudes of the Euler equation:

  F , V, E, R (rings), S (shells, connected surface components) , H (genus)

  H can be computed using the Euler equation (assuming the mesh is the surface of a valid solid).
- Coordinates of the center of mass (Gx,Gy,Gz) of the object
- Volume of the solid
- Optionally, write the number of connected solid components (*cells*).

Notes:

- Please provide an efficient algorithm for computing S (both in time and space).
- Use the sample file provided**: info_mesh.py**
- White all float values rounding to three decimals:

  ```
  def r(a):
      return int(a*1000+0.5)/1000.0
  ```

- Output sample (for the Blender's default Cube):

```
Superficie: 24
Centroide vertexs: (0,0,0)
Grau: max (3), min (3), mig (3)
Arestes: 12 (0 exteriors, 12 manifold, 0 non-manifold)
Arestes concaves: 0, convexes: 12, planes: 0, altres: 0
Euler: F=6, V=8, E=12, R=0, S=1, H=0
Centre de masses G=(0,0,0)
Volum = 8
Cells = 1
```

Deadline: **March 24, 2011** (via Raco)