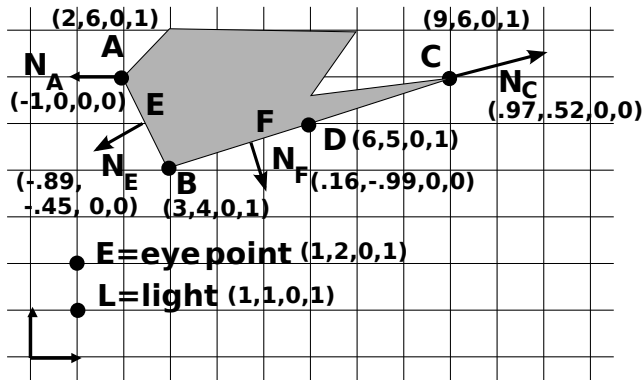


## CPSC 314, Written Homework 3

**Out: Wed 13 Feb 2013**  
**Due: Fri 1 Mar 2013, 5pm**  
**Value: 2% of final grade**  
**Total Points: 50**

### Lighting and Shading (50 pts)

For the following questions, refer to the figure and parameters below. Show your work. Remember to normalize all vectors used in lighting calculations!



- ambient light color  $I_a$  is (.1, .1, .2)
- light color  $I_L$  is (1.0, 1.0, 1.0)
- diffuse material color  $k_d$  is (.2, .8, .3)
- ambient material color  $k_a$  is (.9, .5, .5)
- specular material color  $k_s$  is (1, .5, 1)
- shininess exponent is 10

1. (2 pts) Compute the normal at point B using per-vertex normals, interpolating between the provided normals for face E and face F.
2. (16 pts) Compute the ambient, diffuse, specular, and total illumination at points B, C, and D using Phong lighting and the flat shading model. For flat shading, use the rightmost point on each face.
3. (16 pts) Do those computations using the Gouraud shading model.
4. (16 pts) Do those computations using the Phong shading model.